Telephony.

THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone, Sound Waves
PUBLISHED WEEKLY BY TELEPHONY PUBLISHING CORP.
608 S. Dearborn St., Chicago

H. D. FARGO, PRESIDENT AND TREASURER
S. R. EDWARDS, EDITOR AND SECRETARY

H. D. FARGO, JR., VICE-PRESIDENT AND ADVERTISING MANAGER
D. C. SORENSEN, WESTERN ADVERTISING MANAGER

Entered as second-class matter September 4, 1908, at the postoffice at Chicago, Ill., under act of March 3, 1879.

Volume 92
Number 11

CHICAGO, SATURDAY, MARCH 12, 1927

Subscription — 10 Cents a Copy
$3 a Year U. S., Cuba and Mexico
$4 Canada, $5 Other Countries

LOCAL MANAGEMENT IS BETTER FOR HOLDING COMPANIES

Holding companies and their relations to the individual service companies that are the units composing such organizations, are receiving a great deal of attention these days.

Writers on economics, financial experts, state utility regulators and, of course, the law-makers and politicians, are vigilantly watching the merging of service utilities into consolidations controlled by a holding company, and all are having more or less to say about this development. Usually, what they have to say is in a critical, not to say hostile, spirit. This is especially true of the electric power consolidations.

If Senator Walsh of Massachusetts has his way, there will be an investigation by the United States Senate of these great utility mergers; and it is evident that the motive back of this movement is to show that the formation of such combinations is not in the public interest.

* * * *

There are holding companies in the telephone field, but, compared to the gigantic mergers in the electric power business, the telephone holding companies—with but one exception—are not extensive enough to attract the senatorial investigating eye.

In most cases holding companies in the telephone field—in the Independent group at least—owe their existence to the belief that a group of adjoining or associated properties can be operated more efficiently and economically under one unified management than would be possible under individual control.

This is being tried out in various states, and the future will show whether the general plan is successful. Some of these organizations are showing good results. Of course, much depends on the ability and experience of the men who are identified with the management.

* * * *

An experienced utility man, Theodore J. Grayson, now associate professor of finance at the University of Pennsylvania, recently made an address on the subject, "Management Problems of the Holding Company," in which he gave some good advice that has special application to the telephone field. He urged that holding companies should cultivate cordial public relations for their service company units, and added:

"This leads me to the general consideration of the holding company's relations with its local managers. We live in an age of efficiency, most of which is real but some of which is pure bunk. A friend of mine, the president of a great electric corporation, told me that in his judgment the influenza epidemic was the greatest curse America had experienced in 50 years; the second greatest curse, he thought, was the rise and development of the efficiency expert.

Of course, I know that there are experts and experts, but I wish to insist that 20 years in the utility game have shown me beyond a doubt that there is no efficiency expert as capable of advising a holding company management regarding a purely local situation as an able, honest local manager who has lived among the people who buy the company's service and understands their habits, their peculiar modes of thought, and the way in which they conduct their dealings with the company.

I believe that the holding company, or the management corporation, which gives wide latitude to the local managers of its subsidiaries is the broadest-minded and the most successful kind of a central governing body; and I think that many of the difficulties in operation of plant and in the conduct of public relations, which have marked the progress of holding company domination, have arisen from a lack of understanding on the part of the central staff of the wisdom of allowing broad powers to the local management and placing thorough confidence in it until it is conclusively shown that such confidence is undeserved."

* * * *

This is an excellent argument for the slogan, "The telephone business for telephone men." Certain economies may be effected by unified management of a group of exchange properties, but that management can efficiently continue only by having practical men on the ground who know their work and are acquainted with local conditions.

* * * *

A good idea of how rapidly the use of the telephone is increasing is obtained by studying some interesting figures recently given out by the Home Telephone & Telegraph Co. of Fort Wayne, Ind. Located in the Central West, and enjoying a prosperous growth, Fort Wayne may be con-

sidered a typical American city, presenting telephone conditions characteristic of most communities of the United States.

In 1919 the local and long distance calls handled by the Home company totaled 36,542,705, and in 1926 they numbered 78,642,900, which is a gain of nearly 116 per cent for the seven years. The company states that this is an average of 2,712 calls per telephone per year, or 7½ calls a day.

* * * *

"Of course," says the company statement, "this means outgoing calls only from each telephone, and, since each of these calls must be received on some other telephone, it means that the average telephone in Fort Wayne was used 15 times per day, or a total of more than 5,000 times last year. The growth of Fort Wayne is clearly reflected in the increasing use of the telephone."

On February 1 the number of stations operated by the Home company was 29,819.

* * * *

Telephone and electric companies suffer considerable damage during a year from the loss of insulators thoughtlessly destroyed. Not only boys but grown men carrying guns while hunting often take a shot at poles and insulators "just for fun," but their thoughtlessness often causes serious loss and sometimes means inconvenience to the public by reason of impaired service.

In Michigan the state game department has taken a worthwhile step in issuing a bulletin warning all hunters against using insulators and poles for target practice, stating that "an insulator damaged by a bullet menaces life and property and interrupts service upon which thousands of people depend."

State authorities might well go further and make it a specific offense punishable by a stiff fine to fire at pole lines. Of course, no sensible person who gave the matter a second thought would be guilty of such mischief, but laws and restrictions are necessary for the indifferent and thoughtless.

* * * *

A new name has been coined for the telephone switchboard operator. For many years she has been popularly called the "Hello Girl," or by the less personal title of "Central," but now the newspapers are beginning to refer to operators as the "Number, Please, Girls." All will agree that this description has a more attractive sound and is more appropriate than the others.

The new name, of course, is derived from the courteous answer which the operator gives the subscriber asking for service.

We think most operators will prefer to be called "Number, Please Girls," rather than the somewhat abrupt "Hello Girls," or "Central." Besides, the "number, please" nickname seems to fit better the spirit of courtesy that generally presides at the telephone switchboard. "Hello" is seldom used by present-day operators.

COMING CONVENTIONS.

Texas, Fort Worth, Texas Hotel, March 15, 16, 17 and 18.

Kansas, Manhattan, Gillett Hotel, April 5, 6 and 7.

Iowa, Des Moines, Fort Des Moines Hotel, April 19, 20 and 21.

Ohio, Columbus, Neil House, April 27, 28 and 29.

Pennsylvania, Harrisburg, Penn-Harris Hotel, May 3, 4 and 5.

New York, Rochester, Powers Hotel, May 25, 26 and 27.

Efficient Plant Maintenance Hints

Practicable Ideas, Suggestions and Maintenance Routine for Small and Medium-Sized Exchanges Which Will Produce Results in Reducing Maintenance Costs and Improving Service—Hints for Inside and Outside Men

By Bernard C. Burden,
Manager, Independent Telephone Co. of Red Cloud, Neb.

What subtle change comes over a telephone which, after having been in service for a period of years, gradually seems to lose its pep, and a subscriber complains of poor service? A troubleman is sent out; he looks the telephone over very carefully, and can find nothing apparently wrong. So he says, "weak telephone," and proceeds forthwith to give the subscriber a new telephone.

The old one is taken back to the office later, either to be robbed of its parts, or relegated to the scrap pile. Unlike the automobile, the telephone has not numerous bearings and parts to be worn out through wear and vibration. It would, therefore, seem that, excepting mechanical or electrical injury, a telephone should give good uniform service as long as it would hold together. However, the "back room" of many a small and medium-sized offices is mute evidence that such is not the case.

We are interested in two thoughts with regard to the foregoing. The first as to what causes or brings about this condition; and second, how can it be corrected. Let us first analyze an ordinary magneto telephone. It is composed primarily of an induction coil, receiver, transmitter, and ringer coils, with a switch to connect, or disconnect, the receiver to the line, and the batteries to the transmitter.

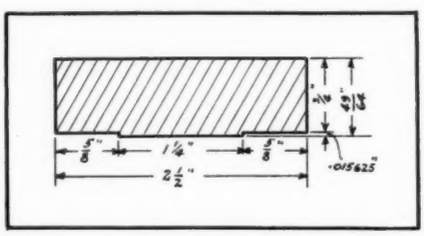


Fig. 1. Gauge for Testing Air Gap Between Receiver Diaphragm and Pole Pieces.

An induction coil would not decrease in efficiency from one year to another, excepting of course mechanical or electrical injury. Therefore, neglecting improvement in design, we may say, that in our hypothetical telephone, the induction coil is as good at the end of 20 years, as it was when new.

Let us now take the receiver, which is composed of electromagnetic coils, a permanent magnet, and a diaphragm. We may again assume that ordinarily the coils would undergo no change with time.

The diaphragm is a very perishable element, for it may become bent, dished, or warped due to various causes. As its cost is small, it should always be replaced, if not perfectly true. The air gap between the diaphragm and the pole pieces is a very important factor, if good strong reproduction is desired. If the gap is too large, then reproduction will be weak and have a deep, far-off sound; if the gap is too small so that the diaphragm rests partially on the pole pieces, then reproduction will again be weak.

A very handy device, that is in use by

one of the largest operating companies in Nebraska, is shown in Fig. 1. It is a thin piece of steel, filed so that the projection will drag across the pole pieces, when the outside edge is resting on the circumference of the receiver housing.

A very convenient and simple method of testing the receiver air gap, which is used by many, is made by letting the index finger slip into the hole in the ear cap with a snap, and the resulting sound indicates as to the approximate correctness of the air gap.

After a little practice, one can gauge very closely the correct gap with this method. For example, if a dull solid thud results, then the gap is too close, and the pole pieces should be driven back slightly; if a rather hollow sound results, then the gap is too wide. A sort of a metallic snap indicates the correct gap. However, this is something that cannot be described, and must be practiced to be of value.

As for the remaining element of the receiver—the permanent magnet—we have here a depreciable element, whose condition cannot be determined with the eye. The force with which the magnet attracts the diaphragm is a good test. Usually a magnet is considered strong enough if the diaphragm can be supported on edge by the attraction of the pole pieces when the receiver is held upside down; that is with pole pieces down.

The remedy for weak magnets is recharging them in a suitable magnet charger. If anyone questions the value of a good strong permanent magnet, let him compare results with a receiver which will not make the foregoing test and a new one, or with a receiver having its permanent magnet removed.

After the air gap has been correctly adjusted and the magnet recharged, the receiver ordinarily will function as well as a new one.

The transmitter is, perhaps, the most vital and important part of the telephone. And transmitters have a very decided tendency to gradually grow less efficient with age. On old telephones it is usually found that replacing the transmitter with a new one will improve transmission considerably, but what we are interested in is the rejuvenation of the old.

Most of the old-style transmitters were equipped with a soft rubber gasket, which passed around the circumference of the diaphragm, and served the dual purpose of a pad and an insulator between the diaphragm and the case of the transmitter. On telephones which have been in service for 15 or 20 years, these rubber gaskets will usually be found to be as hard and rigid as bakelite. They thus tend to shorten the effective diameter of the diaphragm and to restrain it from vibrating in response to the sound waves.

The writer has found dozens of transmitters in this shape, which were hardly fit to talk over. After the transmitter was taken apart, the rubber gasket replaced with a new one, and the transmitter tapped gently on all sides to loosen the carbon granules, they were found to talk up as well as new transmitters. These gaskets can be purchased from the supply houses, or ordinary rubber bands purchased from

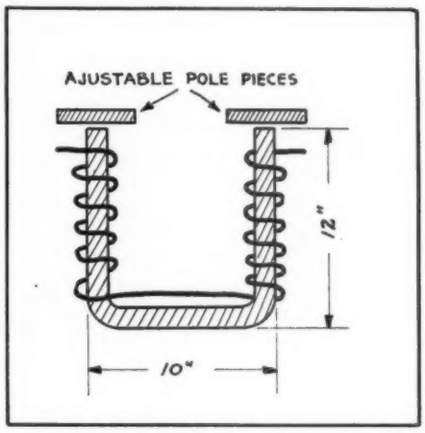


Fig. 2. Details of Home-Made Magnet Recharger.

the drug store, will sometimes do quite well. The size bands to get are 6/8 ins. wide and 2½ ins. long.

Many transmitters when disassembled will be found to have particles of bakelite from the mouthpiece, or other matter, which has become lodged between the diaphragm and the casing of the transmitter, and these particles effectively stop or restrain the transmitter diaphragm from vibrating, when spoken into.

This condition prevails to quite an extent in the rural districts, where the farmers take care of their own telephones, and where a telephone is often without a mouthpiece. The writer has found many telephones in which this space is almost full.

As for the ringer movement: All of us have experienced complaints from subscribers on a long line that their bells ring weak. We go out and examine the bells, and they seem to be all right. We test the winding and find that it is O. K. Being unable to see anything wrong, we take the bell off and place another set on, and they work all right.

Now, are we going to take the old ringer coils back to the office and throw them in the junk box, or shall we find the trouble and place them back in service?

No one ever heard of our large operating companies throwing a set of ringer coils away because they rang weak. They would send them into their shop, the permanent magnet would be taken off, recharged, the armature adjusted, and in a jiffy the bells would be as good as new. Convince yourself of the importance of this magnet by trying to operate a set of bells without one. Of course, this is an exaggerated condition but brings out the point. One large telephone company in Nebraska, operating 120 exchanges, has a man who devotes practically a fourth of his time in the company's central repair shop to recharging these magnets.

On lightly-loaded party lines, most any old generator will operate the drop and signal the operator. But on heavily-loaded lines, such as are prevalent where there are switching subscribers, weak generators are a nuisance, for the slightest ground on the line will usually prevent subscribers having these weak generators from signaling central.

Like receivers and bells, if the winding is not short-circuited out, the trouble usually lies in the permanent magnets which have grown weak with age.

There are several factors which determine the life of the original charge in a magnet. Lightning discharges frequently tend to discharge the magnets. This is due probably to alternating fields set up around the armature, which would weaken the magnets in the same way that a jeweler destroys the magnetism in a watch. If the armature rubs the pole pieces, it will eventually weaken the magnets.

The magnets should be carefully removed and charged until thoroughly saturated.

The most positive way to test the output of a generator, in the writer's opinion, is with a good grade of alternating current voltmeter, while the armature is turned at an average speed. The Weston people make a dandy, which is portable and which is a valuable and convenient instrument to have, where there are many old magneto telephones to maintain. With a good four or five-bar generator, turned at normal speed, the voltmeter will show from 80 to 90 volts; a weak generator would show around 20 to 40 volts.

In the absence of any testing device, one gets a good idea of the strength of the magnets by the pull of the armature for the pole pieces. Considering the high price of a generator, it is certainly economical to recharge the magnets.

The wiring and switch-hook of a telephone must be kept in good shape, both electrically and mechanically, before good service can be rendered. As a rule, not much trouble is experienced in locating trouble in these items. If the reader will follow the foregoing suggestions, very few parts of a telephone will need be thrown away or rendered useless.

To recharge magnets, suitable apparatus must be available. A very efficient magnet charger can be made at a small cost as follows:

Procure a piece of cold-rolled steel line shafting, 34 inches long. Heat and bend in the shape of a U, as in Fig. 2. Start winding No. 12 double cotton-covered wire around either leg, until six pounds of wire have been wound on. Each layer of wire should be insulated from the next with a layer of brown wrapping paper.

When one leg or pole is complete, then

carry over and repeat the operation on the other pole, making sure that the wire is wound around the core in the opposite direction from the first pole.

After the winding is completed, the electromagnet should be placed in a narrow

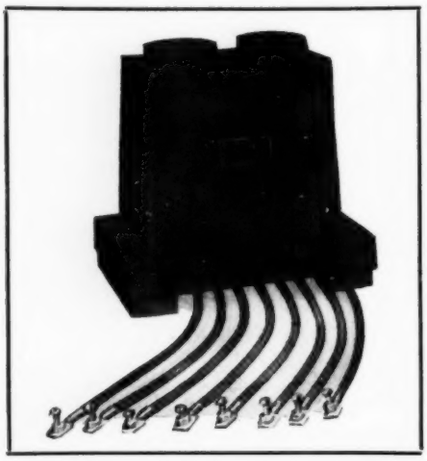


Fig. 3. A Factory-Built Magnet Recharger.

box, two holes being drilled in the lid so the two poles will just project, flush with its top. The unit should now be fastened to the side of the repair bench, and connected to a six-volt battery. Usually an old storage battery can be picked up at a battery station for a small sum, and is just the thing for the purpose.

Two rectangular pieces of good magnetic iron should be secured, so as to be laid upon the tops of the poles, in order to extend the poles out so as to be adjustable for different magnets.

In charging, the unlike poles should always be placed together; that is, the unlike poles of the charger and the magnet being charged should always be together. Magnets can be aided in taking a charge by gently tapping with a hammer.

A keeper or piece of iron should be placed across the bottom of the magnet when it is being removed from the charger, so as to prevent loss of magnetism. Experience will soon enable one to recharge magnets as well as do shops making a practice of it. The accompanying illustration, Fig. 3, shows a factory-built charger.

The Line.

Much has been written and said about the good qualities an exchange manager should have. After all is said and done, every outside plant will reflect the characteristics of its manager. The ideal manager is the one who preventively maintains his plant the year round.

This manager says: "It is now winter, and the men have some idle time; now is the time to do our tree trimming. The property owner will much more quickly give his consent now than in the spring, when the trees are covered with foliage. It will be much easier on the trees than when the sap is running."

And so he goes out with his men. The trees are thoroughly trimmed; not only the trees that are growing into the leads, but also the stray branch that is rubbing a drop, and which would soon wear through the insulation creating a case of trouble and possibly a drop replacement.

It is especially important that the trees be trimmed wherever they are rubbing cable. Many managers assume that cable was invented to do away with tree trimming.

This work completed, the manager says: "Spring will soon be with us, and with it the spring rains. I will go out now and inspect the cable plant for cracks and breaks, and see that it is all supported in proper manner."

So he goes forth, armed with tape and notebook. Each pole is inspected for breaks in the cable, for a large percentage of breaks occur at the pole, due to strains and the rest of the span swinging, while at the pole the cable is more rigid.

Wherever the cable runs through trees, or where it has hit or rubbed against any surface for a period of time, it is carefully inspected. Whenever cracks or breaks are found, they are carefully taped up, a note made of the location, and the cause of the break removed. Places which have been unsupported, due to rings slipping, are inspected and the rings replaced.

While on this inspection, protected cans are checked to see that all the working lines have the blocks and fuses in place, so as to give the maximum protection from lightning when needed.

After the cable inspection is completed, when it is convenient to do so, a cableman is engaged. With the notes previously taken, he is able to quickly proceed from one place to another without any loss of time, and can easily recognize the breaks, both from notes and the taped places.

After the cable work is completed and the frost is out of the ground, then the time is ripe for a spring overhauling. We shall assume that our ideal manager has but recently taken over the plant and, therefore, does not have it in the shape that he would the following year.

He first makes a brief survey of work to be done, tabulating the different work with material requirements. On this survey, minor items, such as broken glass, poor drops, and an occasional broken-off pole are immediately taken care of.

When the survey is complete and the material arrives, then the real overhauling is commenced. And due to the pleasantness of spring weather, much more can be accomplished than in the extreme heat of summer.

Corners, the ends of lead and terminal poles, should receive first attention. Wherever a corner or terminal pole is replaced, it should always be with an extra good pole, having the best butt treatment. The arms should also be treated. Galvanized pole shims should be used for down guys.

Some may hesitate at the extra cost of all this. However, if one will give it a little thought, it is plainly evident that this extra expense will more than prove itself, on corners and poles where there is extra strain, and where considerable labor is involved in making any change.

Leaning poles should always be straightened, for they spoil the appearance of the line and impose additional strain on the pole.

When the corners have been rebuilt, weak posts in the line reset, subscribers' drops replaced where needed, bad joints cut out, and the slack pulled, then very little maintenance expense should result for some time to come. But a manager must not sit down and wait for his plant to rot down. Rather he should be constantly on the alert to replace anything broken or worn; and to do a permanent job instead of a temporary one, when out on trouble.

Fig. 4. Body Designed for Flat-Bed Truck to Hold Various Material Required in Maintenance Work.

Trouble calls should always be looked at from a "cause and effect" standpoint. First, remove the effect so as to clear the trouble, then go after the cause. For example, an

anchor wire may be broken causing the wires to cross. The wires should first be uncrossed, and the cause should then be repaired, for if this is not done other service interruptions will result—and every trouble call costs money.

To properly maintain a plant, one must first have a suitable service conveyance, with sufficient material to replace or make repairs of all ordinary trouble. In Fig. 4 is shown a body designed by the writer. This not only accommodates all the needed material but does it in such a manner that material is as neat and nice as if it were on the storeroom shelf, and is always "getatable."

The cost of this body built by any good carpenter is about $29, labor and material. And any company using a flat-bed truck will soon agree, after using a body constructed in this manner, that work can be done twice as quickly and with much better satisfaction to the man.

When a man takes out a car like this, he knows that it contains every different item of material which he might need for ordinary repairs. This car has been in use for some time, and not a single fault has yet been found with it. It is recommended to any company that takes pride in the efficient conduct of its business.

The Switchboard.

Apparatus maintenance is a subject in itself, and each individual has a system or routine of his own. The following plans, and methods, if followed out, will be found good and should prove of value to a company using them:

Maintenance in the office starts first on the main frame. The appearance of a main frame is usually a good index of how painstaking a man is in his work. However, this is not always the case, for sometimes men are not informed as to the correct manner of running jumpers and use first one method and then another, with a most unsightly conglomeration as a result.

A predetermined uniform method should be the order of every office. One method that is fine, where No. 22 gauge flameproof wire is used, is to skin off ¾ inch of the insulation, then carefully scrape the enamel off, being careful not to nick the wire. With long-nose pliers, wire is given a one-half turn around the punching, being careful to bring the insulation right to the front of the punching.

The advantages of this method are that the jumper can be touched lightly with a hot iron, and will slip off the punching, and can be moved to another punching without skinning a new place. It is also very compact and uniform looking. It should be brought around the punching, so that it is always soldered on the right hand side

Some companies use a complete turn around the punching. However, if care is taken the method described is just as good, electrically, and much easier to change jumpers.

When a jumper is moved to a different punching, then the vacated punching should be cleaned of solder, for if allowed to remain it will eventually have to be removed when the punching is again to be used and will present a poor appearance.

It is also important to leave a uniform

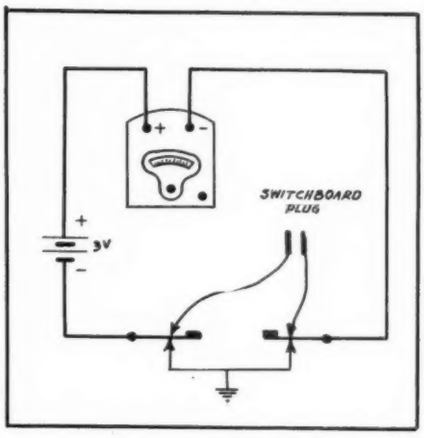


Fig. 5. Voltmeter Circuit for Making Conductivity and Insulation Tests from Switchboard.

amount of slack in the jumpers. Occasionally there are managers who do not believe in leaving any slack. While it is true that a rack presents a neat appearance, yet it is not conducive to efficient work on the rack, for whenever a jumper needs be moved to another punching on the same block, a new jumper usually must be run. The best practice seems to dictate from four to six inches of slack.

In a magneto office of 100 lines or so, apparatus maintenance is very simple, consisting in the main part of keeping the cords cut back when the conductors are broken, and keeping the drops and jacks in proper working order. Space will not permit a description here of the proper method of cutting-back cords. However, the manufacturer from whom you buy your cords will be glad to furnish you with illustrations and instruction as to the proper method.

In old boards which have seen lots of service, the sleeve thimbles become worn, and must be replaced. The proper way to determine whether they need replacing is with a jack gauge, which can be obtained from the board manufacturer. Many old boards are discarded and new ones bought, when the expenditure of a few dollars for new tip and ring springs and jack thimbles, plus a few evenings' labor by the wire chief would have put the old board in excellent shape.

Plugs after so long a time get smaller in diameter, due to constant sliding in and out of the jacks, make erratic contact and then need replacing. Here again there is need for a plug gauge.

Jack and plug gauges are usually sold together. There seem to be more offices without these gauges than with them. Considering their small cost, it is false economy to be without them.

Switchboard trouble should never be allowed to accumulate, and one should never resort to shifting to another line, or jack, in order to clear trouble, unless temporarily while clearing the trouble.

On common battery boards more care and knowledge are necessary to keep the apparatus working at its highest efficiency. Here there are numerous relays that must be kept in careful adjustment. However, under ordinary conditions, assuming that the initial adjustment is correct, this adjustment will seldom change.

Ordinarily incorrect operation or non-operation of a relay can usually be traced to lint or dirt on the contacts. This can be taken out either with a flat flexible piece of steel, or with a small brush and carbon tetrachloride. Finger nail files, or platinum files should never be used on contacts of relays.

The small switchboard lamps, especially in the supervisory signals, after having been in service for long periods, will grow dim and should be replaced with new ones.

The supervisory lenses, due to their position on the keyboard, become coated with dirt in such a manner that they do not attract attention as they should. The guard should be removed, and the lenses taken off and washed in warm, soapy water. One will be surprised how much brighter and attention-getting they will be. Care should be taken to see that they are perfectly dry before being placed back in the board.

Several replacement cords with plugs attached should be on hand ready to take the place of any that may become broken. The broken cords may then be repaired in the shop during spare time, and the plugs polished ready for service again. This is much better than attempting to cut back cords without removing them from the board.

The writer recently constructed a plug polisher for use in polishing the plugs while in place on the board. It makes use of the motor out of an old sweeper with a felt buffer wheel, and has a small tin guard to catch the dust. Bon Ami was used for a polishing agent but regular polish sold for that purpose is preferable. Polishing should take place once or twice a month. Care should be taken not to polish to such an extent that any of the body of the plug is removed.

Boards should be kept polished with good furniture polish on the outside, and dust should never be allowed to accumulate on the wiring and shelves inside. The external appearance of a board, whether it is neat and nice-appearing, whether the cords are all in perfect condition, both from appearance and working order, exert considerable influence on the quality of service an operator renders.

One of the most convenient wrinkles that the writer has had occasion to make use

of is a voltmeter mounted at some convenient place on the switchboard, arranged for conductivity and insulation tests by having two dry cells in series with it, and with a regular lug on the plug shelf, arranged for getting a reading from either side the line to ground, by pressing a one of two buttons.

Bridge readings are taken by simply inserting plug without touching buttons. A double-spring double-throw, cam-type key would accomplish the same thing probably more conveniently. Fig. 5 shows the wiring.

In plants where the manager, wire chief and "bug hunter" are all one and the same man, this arrangement is fine. One can open the line, call the operator, and get a positive test. A good chief operator soon becomes competent to diagnose trouble and in the absence of the manager can sometime send inexperienced help out to correct trouble.

All of the ideas, suggestions and routine as stated in the preceding paragraphs may not be applicable to certain exchanges, but that many of them, if followed out, will accomplish untold good in innumerable exchanges is certain. They apply mainly to the small and medium-sized exchanges, of which there are many.

Bell Companies to Furnish Subscribers with Hand Sets.

Announcement has been made by various of the Bell associated companies that they will soon make available hand set telephone instruments to subscribers who have need for them. These are the "cradle" type or European combination receiver and transmitter sets which many Independent companies have provided subscribers for some time past.

Officials of the New York Telephone Co. admitted last week that they had capitulated to a growing public taste for this type of instrument. The company attributed to the movies and the stage, rather than to experience with continental telephone service, or to the natural preference of using one hand instead of two, the increasing demand for the hand set.

About 600 contracts have been signed in New York for the New York company's version of the foreign instrument. Only the difficulty in accumulating enough instruments to supply the demand has delayed the company in offering the cradle telephone. It is understood that for some time department stores have been conducting sales of this type telephone and that many people had installed them on their lines. In fact, so many have been placed on the lines that the New York Telephone Co. ran advertisements in New York City newspapers last week directing attention to the clause in the subscriber's contract prohibiting attachment to the lines of any apparatus or appliance not furnished by the company.

J. S. McCulloh, president of the New York company, on March 1, said that these instruments are not better telephonically than the usual desk sets and wall sets, but will be supplied to meet the wishes of those subscribers who feel they are more convenient.

"There have been experiments with hand sets in the Bell telephone system for many years," said he, "but the engineers were not willing to adopt hand sets until one could be devised that would give the same high and uniform grade of service which the best desk or wall sets give. One of the reasons for the poorer service of previous hand sets is that when the transmitter is on a movable handle, as it is in the hand set, and that handle may be held in any position, the transmitter will not work as well as when it is in a desk or wall set designed to remain in an upright position.

"However, about five years ago the American Telephone & Telegraph Co., in its Bell Telephone Laboratories, discovered a principle by which the difficulties of giving good service when using a hand set could be overcome. Even after the principle was discovered, it took an immense amount of work to embody it in a hand set capable of manufacture on a large scale and at a price that would not greatly increase the cost of telephone service to those who wish to use the hand set.

These problems have now been solved by the research engineers and later in the year, as manufacture proceeds, the New York Telephone Co. will be in a position to begin the installation of hand sets at a small increase in monthly charges, plus the usual change of instrument charges, to any who desire this type of instrument.

It has been the custom of the company once or twice a year to explain to our subscribers why we cannot provide good service if they add to or change the apparatus which the telephone company furnishes. It is so essential that only apparatus of high and uniform quality, subject to testing and repair or replacement by the company be used, that the company does not sell apparatus to its customers, but only contracts to render service over the instruments which it furnishes and which it keeps in order.

The use of other instruments not only impairs the service of the person who uses them but impairs that of every one else with whom he is connected. It is for this reason that the New York company is sending out with the March 1 bills a notice to its subscribers that the use on its lines of the so-called 'French phone' or other telephone sets than those furnished by the New York Telephone Co. is a breach of the contract which each subscriber signs with the company.

Moreover, the New York company had already notified the distributors of these 'French' telephones that to solicit subscribers to purchase telephone instruments for use on the New York Telephone Co. lines is tantamount to inducing the subscriber to break his contract with the New York Telephone Co., and that it is against the public interest to sell people instruments for purposes for which they cannot use them.

The New York Telephone Co. has done these things in the interest of its subscribers in the hope of saving them from buying instruments which they cannot legally use and in the interest of maintaining the high quality of service which they need."

New Federal Radio Commission to Immediately Begin Work.

The senate interstate commerce committee refused on March 4 to take any action on the nominations of O. H. Caldwell of New York and H. A. Bellows of Minnesota as members of the new Federal Radio Commission.

These nominations were referred to the committee by the senate after the appointments of the other three members of the commission had been approved.

Some senators sought to obtain an adverse report against Caldwell and Bellows, but a majority insisted that their nominations go over to the new senate without prejudice. There was opposition to the two appointees on the ground that they were "handpicked" by Secretary Hoover.

The new commission was completed on March 5 when President Coolidge made recess appointments of Orestes H. Caldwell of New York and Henry A. Bellows of Minnesota.

Following conferences on plans of procedure in view of the lack of funds brought about by the failure of the deficiency bill, Secretary Hoover announced on March 5 that he was inviting the radio commission to meet in Washington. Clerical help will be lent from the Department of Commerce so that activities may be started under the new law.

As a first step in installing the new radio regulation system, Secretary Hoover has created in the commerce department an independent radio division, under direction of William D. Terrell. The Federal Radio Commission will take up the duty of handling judicial and semi-judicial radio questions, but will execute its decisions through the new commerce department agency.

The first meeting of the commission was scheduled to be held in Washington on March 8. All of the members, with the exception of William H. G. Bullard of Pennsylvania, who is in China, were expected at the meeting. Mr. Bullard is expected to return in about five weeks.

Mr. Caldwell said that there were approximately 700 stations in operation now, 165 were under construction and plans had been reported for 328 more. Since the old radio law was held ineffective last July, 206 new stations had been built, 50 had changed location, 170 had changed power, 106 had changed wave length and 72 were preparing to increase their power.

Some of Speakers on the Texas Convention Program.

The annual convention of the Texas Independent Telephone Association will be held at the Texas Hotel, Fort Worth, March 15-18 inclusive. The program this year, it is believed, excells that of any previous meeting.

Among those speaking at the general sessions will be Lon A. Smith, of Austin, a member of the Texas Railroad Commission who will speak Tuesday afternoon.

J. B. Earle, of Waco, on Tuesday afternoon will speak on "State Regulation of the Telephone vs. Self Regulation."

Judge S. A. Lindsay, of Tyler, president, Gulf States Telephone Co., will discuss "Telephone Consolidations and the Effect."

At the general session on Wednesday, R. S. Manley, president Texas Creosoting Co., Orange, will present an illustrated talk on wood preserving.

R. W. Hedrick, Jefferson City, Mo., secretary, Missouri Telephone Association, will be another of the Wednesday morning speakers.

On Wednesday afternoon, George W. Robinson, president, Tri-State Telephone & Telegraph Co., St. Paul, Minn., and vice-president, United States Independent Telephone Association, will discuss the recent depreciation order of the Interstate Commerce Commission.

E. C. Blomeyer, Kansas City, Mo., chairman of the board, Diversified Investments, Inc., will speak on "Telephone Financing."

There will be a traffic conference in charge of Chairman Sam H. Shutt, of Waco, Earl R. Evans, of Waco, and Oscar Burton of Tyler.

The speakers will include: Miss Anne Barnes, Des Moines, Iowa, traveling chief operator, Iowa Independent Telephone Association; Mrs. Allen Chase, Hillsboro, chief operator, Texas Telephone Co.; F. C. Bookout, Cleburne, district manager, Southwestern Bell Telephone Co.; Mrs. Emma Gayle, traveling chief operator, Gulf States Telephone Co.; Miss Willie Campbell, West Texas Telephone Co., Brownwood; and C. A. Shock, Sherman, vice-president, Northern Texas Telephone Co.

Germany Asks Britain for Wireless Telephone Service.

The German postoffice department has opened negotiations with British authorities for the extension to Germany of the wireless transatlantic telephone service recently inaugurated between London and the United States.

Under the proposed arrangement the messages between Germany and the United States would pass through London.

A DOUBLE-HEADER

By Miss Anne Barnes

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

Although his manner, his general appearance, even his baggage, suggested that he was a man accustomed to plenty of worldly goods, he looked out of eyes which indicated a tired and harassed soul.

He wanted something; more than that, he needed something which his money could not buy, and I believe he realized it.

He sat there on the train, holding an open book on his knee; but he was not reading. He made a fruitless effort to do so now and then, but his head soon sunk wearily back on the cushions of the seat, his eyes unclosed. He seemed unconscious that the train was fast filling with passengers.

My impression was that he was not unhappy; that he was over-burdened with some care which under different circumstances need not concern him.

He observed neither the stops nor starts of the train. Consequently, when a young man came down the aisle, paused before his seat and asked, "May I share this seat with you?" he seemed aware for the first time that the train was crowded.

As he glanced at the young man sitting there beside him, something like a spark of interest flickered over his countenance; it was no wonder, for his seat companion at first glance certainly seemed a vivid personality.

"Now we shall see what will happen," I thought.

As is usual when sharing a train seat with another, their opening remarks concerned the weather. This is usually a good stopping or starting place, I find, and with them it was a good starting place.

Their remarks might be divided into three parts: First, conversation on current topics of the day; second, business topics of a personal nature; third, a friendly and interesting visit.

When I left the train they were in the midst of a most friendly visit, which had every indication of future relationships, because I saw Mr. Wealthy writing the name and address of the young man in a book.

"Are you in business for yourself?" the older man asked.

This query came in part two of their conversation.

"I am," replied the young man briskly. And then he added earnestly but with one of his flashing smiles:

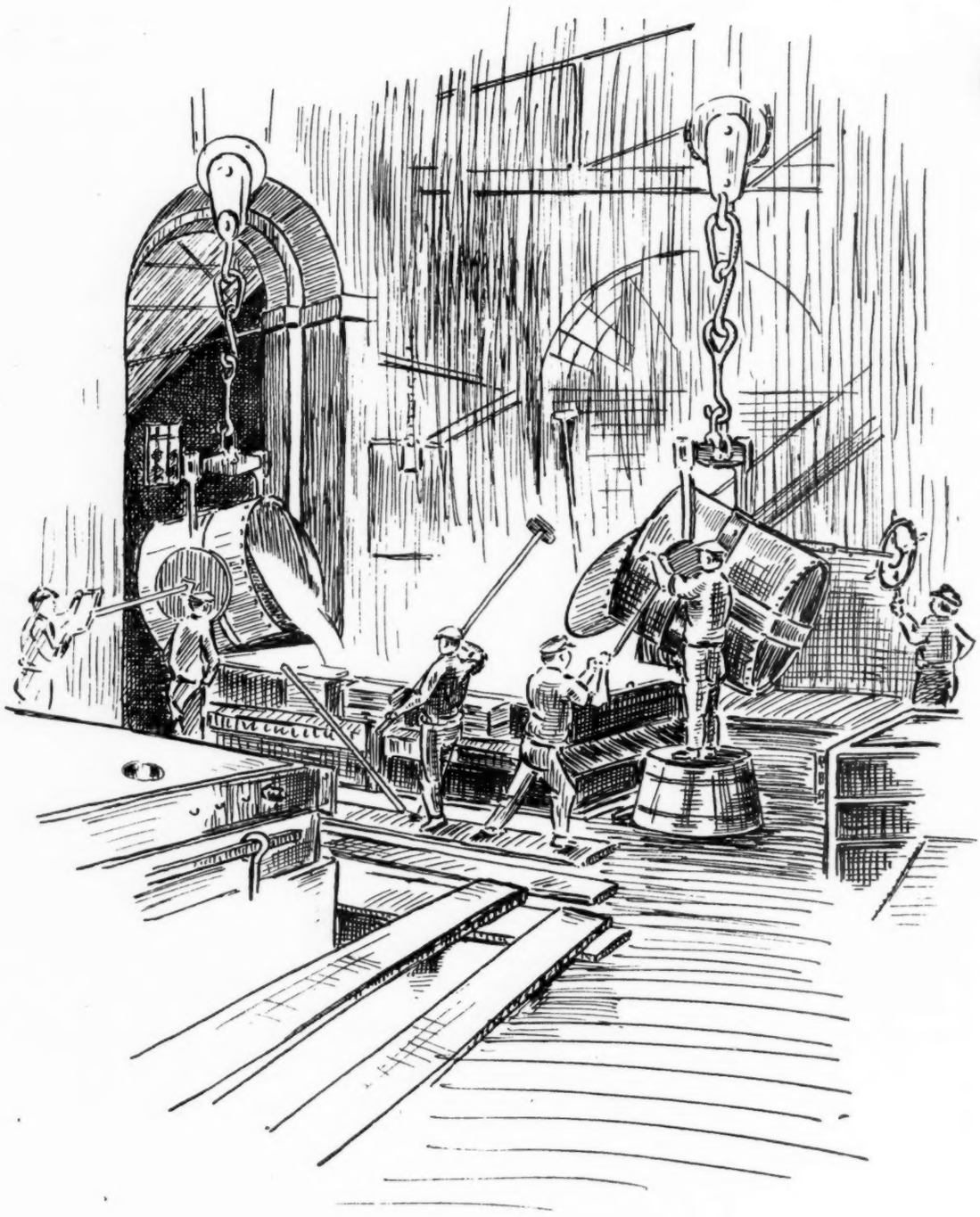
"I make and sell my own commodity. I am a salesman for Blank & Co. In order to sell their goods successfully I set myself up in business—salesmanship. That is my personal commodity. My objective is a regular double-header. If I make it, my firm will come out on top in my area, and I will come out on top with my firm.

I believe it will be a simple matter if I continually follow a few simple rules like these:

1. To make as few mistakes as possible.
2. To keep my firm on top, ahead of other competitors in the mind of my customers.
3. To learn all I possibly can about the business.
4. To talk with other employes about 'our organization' instead of 'the firm' or 'the boss.'
5. To make myself the best salesman out in the field so that when I get a raise it will be on my own merits rather than 'pull' on the inside.

"And I'm on my way home now to spend the holidays and to give the good tidings to my family that the *principle* of the *thing is right*, and *it works*. I am to have a substantial raise the first of the month."

"Kalamazoo," called the brakesman. As that was my station, I must leave the rest of this episode to your imagination.



Sheffield the Steel City of the World

The Steel Industry of Sheffield owes much to the late SIR WILLIAM SIEMENS, D. C. L., F. R. S., etc., whose discoveries made the open hearth process of steel manufacture possible.

It is therefore appropriate that the ***Automatic Telephone System*** *recently fitted in the* ***Sheffield area*** *should be designed, manufactured and installed by Messrs. Siemens Brothers & Co., Ltd. of which company SIR WILLIAM SIEMENS was the founder.*

This telephone exchange area is the largest in Great Britain to be changed over to automatic working at one time. It comprises 9 exchanges, having a total capacity of 18,970 lines equipped.

SIEMENS

AUTOMATIC TELEPHONES

MENS BROTHERS & CO., LTD., Woolwich, S. E. 18, England

esentation *Abroad: Winnipeg, Rio De Janiero, Cairo, Khartoum, Cape Town, Johannesburg, Melbourne, Sydney, Brisbane, Adelaide, Perth, Hobart, Wellington, Auckland, Tokyo, Calcutta, Bombay, Madras, Ipoh (Perak, F. M. S.) The Hague*

Here and There in Telephone Work

Are We Hitched Up Right?

By William L. Bott,
Manager, Jasper County Telephone Co., Rensselaer, Ind.

For some years back I have studied the telephone situation from the public usage standpoint and have watched the workings of the legislatures of the several states, particularly of our own state of Indiana, and especially the present house and senate ideas and political manipulations; seeing what has brought and is at present bringing to the telephone utilities their several condemnations by utility users and their being made a football for the single-barrel politician who is endeavoring in every possible manner to get some publicity by his intense interest in the public, thinking, as a rule, only of the future office he expects to seek. The newspapers have no knowledge of this manipulation of the utility business and above all of the telephone.

In view of all this, I am forced to ask the question of myself: "Where are we, the telephone utilities, to be classed—railroads, interurbans, water supplies, electric plants, etc.?"

What is there about these that have any relation to the human, personal interest and association that comes from the telephone interest? Little, if anything.

What does Bill Jones care who is on his water main, or how many? He does not care whether the line that supplies him starts in the center of the city or in the center of the lake or if his worst enemy is on *his* line, just so long as he gets something wet when he turns the faucet. There is no *human* element in it anywhere along the line.

What does Mrs. Bill care who is taking light current off of her circuit? The light company can start at the office and run a lead across the town, jumping from one house to another, taking on every Tom, Dick and Harry. What does she care how much light her next-door neighbor, who does not speak to her—whom she is sure has some dark skeleton in her closet; some one on whom she would not wipe her feet—takes from her circuit, so long as she can turn the switch and get what she wants?

There is positively no *human element* entering in it. It is the same with any other utility. Now the telephone is entirely different. Mrs. Bill and Mr. Jones have a personal interest in every subscriber on the telephone plant. She, or he, at once becomes a neighbor with every other patron of the plant. She is personally interested in who is on the same circuit with her. The telephone utility is dealing with *human nature* at both ends of the line; and in the central station everything is of the human element. The service rendered and the service received is *personal;* not only personal but the business of this old world is wholly manipulated by the personal, human contact of the almost human wires making the connections.

The business, commercial, educational, social and professional fields of business are almost entirely manipulated by the service known as the telephone utility. Thousands and millions of dollars of valuable business are daily transacted over these human circuits which are serviced entirely by human personalities and human natures.

Another element which enters into the utility field, that proves to me that we are

A Unique Exhibit at the San Francisco Automobile Show. Miss Anne Lorenzen Telephoning the 600 Service Stations (on the Map) Connected with the California State Automobile Association

hitched up wrong when we unite our interest with the other so-called utilities is this:

There is no class of service given or sold to the public that operates in the same manner as the telephone business. And I feel that we as telephone utilities do not stress this sufficiently to the public. It is that the more of the goods delivered by any utility that comes to my mind, the cheaper this utility can supply the service or commodity.

Not so with the telephone service. The more this utility furnishes, the greater the cost to supply. For instance, we placed new central office equipment in one of our offices at a cost of some $12,000. We placed in another office supplying one-third as many subscribers, at a cost of $1,000, the same make of equipment. This, as every telephone proprietor or manager well knows, is true. The more water supplied, the more current supplied, the more passengers carried, decrease the cost at a rate that would be surprising to persons not interested.

In the present Indiana legislature, I find that the telephone utilities are being condemned, because actions of some other utilities have done what the public feels is rank injustice. If you will study the thing that has caused public disfavor in the past, the majority of the times it has come from some other utility manipulation of some business that is foreign to our interests, and has no *human elements* whatever. The telephone interests, on account of being so near the *human* and business side of the general public, receives the boomerang aimed at some other utility.

To me, there is no comparison in the service furnished and little similarity only in the name "utility." I believe we have an entirely distinct and separate service to render and a field to serve, and that we should be acquainting the business and commercial users of this country, as well as the service commissions of the several states, with the distinct differences of usages we are serving.

I am wondering if we are rightly hitched.

Open-View Lobby Arrangement in Small Size Exchange.

Latest features of telephone exchange architecture, which brings the switchboard operators as well as the manager and cashier out in view of the public, are embodied in the recently completed exchange building of the United Telephone Co. at Lindsborg, Kans.

The lobby of the building is a large room with the manager's office in a low paneled enclosure, which makes him most accessible to the public. The cashier's counter is on the opposite side of the room from the manager's office. The lobby is equipped with office furniture which is in harmony with the attractive manner in which the room is decorated.

The decorations of the lobby are of the latest two-tone tiphany blend with a base color of warm tan. The border is very attractive because of the use of the trade mark of the United Companies. G. N. Malm, a Lindsborg artist, designed the decorations for the lobby.

The front of the lobby is furnished with comfortable chairs, and a reading table supplied with current magazines. They are for the use of patrons and visitors.

One side of the lobby wall is lined with long distance booths equipped with desk telephones and chairs. They are well-lighted and ventilated so as to be comfortable for the use of patrons.

A. J. Fredrickson, who has been manager of the Lindsborg exchange for the past 19 years, reports that more than 600 people visited the new building at the opening which has held on December 4.

Each visitor was given a "free talk" ticket, which was good for 25 cents in payment for a long distance call made during that month. Following a contest, a grand prize of five months' free telephone service was given. A second prize of three months' service and a third prize of two months' service was extended to patrons of the company.

The building has a conveniently arranged restroom for the telephone operators, and also the latest type of switchboard equipment.

D. A. Van Trine, assistant to the general manager of the United Telephone Co., who built Lindsborg's first exchange back in 1899, was present at the opening of the new building. He financed the building of the first toll line from Salina to Lindsborg by the advance sale of conversation tickets over that line.

View of Modern Lobby in Exchange of United Telephone Co., Lindsborg, Kans.

Valentine Party for Toll-Center Tributary Telephone Folks.

The operating personnel of Orange City, Iowa, did themselves proud in putting on a novel Valentine party at the Odd Fellows hall in Orange City, Monday evening, February 14. All managers, operators, linemen and their relatives tributary to the Orange City toll center were invited.

A goodly number gathered in the daintily decorated hall at an early hour. Dancing the "Square Ship," "Broom" dance, and other popular round dances were indulged in to the music of a phonograph. A fine repast and refreshments were served on tables decorated with valentine symbols.

The credit for the success of the party is entirely due to the operators as a body —the manager merely sanctioning the affair. It was a fine way to initiate the new chief operator, Miss Katherine Clark, and it helped all to know one another as helpmates in rendering telephone service in Northwest Iowa.

The Orange City exchange is owned by the Central West Public Service Co. H. E. Loveland is the new manager and has already made many friends in and about the city. Cornie Van Driel is lineman.

The operators are: Pearl Van der Stoep, long distance; Mrs. Van Driel, night operator; Katherine Van der Schaaf, Catherine Ver Hoef, Ruth Groen, Arta Mouw, and Wilmena Mouw, relief operator.

As visitors to the party there also were present: Mrs. Josephine Eulberg, Mr. and Mrs. Chas. Van Citters of Alton, Cornie Van Surksum, Frank Van der Stoep, Peter Van Driel, Margaret Van Wyk and Henry Boxtel, Orange City.

A return party, or picnic, by the tributaries is anticipated for the future.

President Has Private Telephone Booth in His Office.

The President of the United States does not have a telephone on his desk. Instead, he goes into a booth in a small room adjoining his office whenever it is necessary for him to use a telephone.

President Coolidge uses the telephone to a greater extent than did some of his predecessors, as for example, Theodore Roosevelt and Woodrow Wilson. President Coolidge, even when he was governor of Massachusetts, found the long distance telephone a great time-saver, and he has continued to make use of it since he took up his residence in the White House.

Chief Scientific Advances in 1926; Some of Practical Applications.

Light rays employed to play tunes on a new kind of organ; atoms shot out from radium and making loud thumps when they hit on little metal plates; beams of "black light" that make human teeth shine in the dark while false teeth are dead

Manager J. Frederickson and Alice Westman, Bookkeeper and Chief Operator, Are Both Readily Accessible to Public.

black; an instrument by which deaf persons can see the sounds of speech instead of hearing them; and a new electric lamp which is merely a glass globe suspended in space, without visible connection to the power wires; these were among the scientific novelties shown to the New York Electrical Society at its January meeting in New York City, during a talk by Dr. E. E. Free, of New York University, on "Scientific Conquests of 1926."

Dr. Norman Hilberry, of New York University, operated the new "photoelectric organ," as it is called. This instrument produces musical tones from light rays. Small electric lamps are mounted, each one in front of one of the series of holes drilled through a rotatable metal disk. As this disk rotates, light rays from the lamp or lamps which are lighted, produce a series of light pulses, one for each hole that passes in front of a lamp. These pulsating light rays then pass to a photoelectric cell 25 or more feet away.

The photoelectric cell converts the pulsating light rays into electric impulses, which are then transmuted into sound by a system of loudspeakers, producing a musical note having a quality not unlike that of organ notes. The organ is operated by a set of switches, shown under Dr. Hilberry's fingers, Fig. 1, in the same manner as though they were the keyboard of an ordinary organ.

The pencil in the hand of C. A. Johnson of New York University, Fig. 2, points to the small photoelectric cell which receives the musical light ray coming from 25 feet distant. This cell converts the light ray into an electric impulse which is then converted into sound by a system of loudspeaking telephones.

Photoelectric cells of this same character can be used to construct invisible and imperceptible burglar alarm systems, as was also demonstrated by Dr. Free.

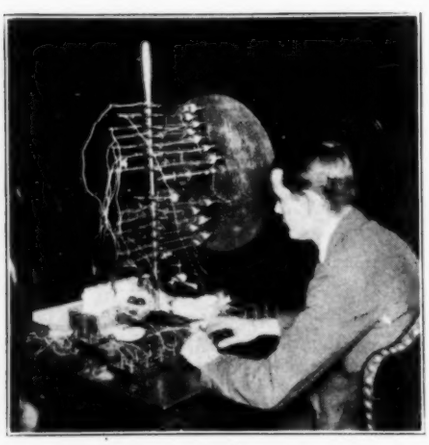


Fig. 1. Operating the "Photo-electric Organ," Using a Bank of Switches as a Keyboard.

When light enters this photoelectric cell, an electric current is produced from the light. The apparatus can be so arranged that so long as a ray of light falls on the photoelectric cell the burglar alarm is quiet. However, when a cover is slipped down over the cell, thus excluding the light—or when an intruder walks through the beam of light falling on the cell and thus casts a shadow on the cell—the interruption of the light entering the cell causes the burglar-alarm bell attached to the front of the table to ring.

Fig. 2. Demonstrating the Light-Ray Receiver, a Part of the Photoelectric Organ.

Instead of a beam of visible light, it is possible to equip this apparatus to operate with a beam of invisible ultraviolet rays or infra-red rays, thus producing a burglar alarm which is entirely invisible and imperceptible, but which would indicate by an alarm bell, or any other signal, the fact that an intruder has walked across the beam of invisible rays and, unknowingly, cast a shadow on the electric eye of the photoelectric cell.

The photoelectric organ does not involve, Dr. Free explained, any new discoveries in science, but is merely a new application of scientific principles already known. Its chief utility is expected to be in illustrating these principles, although the tonal quality, which resembles that of a pipe organ, makes the use of the instrument as a musical novelty not impossible.

The apparatus producing the "black light," recently so much discussed, was supplied by the Cooper-Hewitt Lamp Co., as was the new electric lamp which burns without being connected to the wires. The apparatus by which deaf persons can see sound waves is a product of the Westinghouse Electric & Manufacturing Co.

The machine for making atoms audible was loaned for the occasion by the General Electric Co. The latter apparatus, Fig. 3, technically known as an "atom counter," was loaned to the New York Electric Society by Dr. Willis R. Whitney, head of the company's research laboratory.

Dr. Free, at the reader's left, is holding in his hand a small fragment of radioactive material from which fragment a stream of atoms of helium, each atom stripped down to its central nucleus, is being continually emitted. These atoms fly out with speeds exceeding 10,000 miles a second, but soon hit against atoms of air, so that the range of the particles is not great.

A few of them enter the end of the small metal tube seen projecting from the end of the wooden case. These pass through a thin window of metallic aluminum into a vacuum. Here they hit against a metal plate and create electric changes which are amplified by a radio apparatus. When this device is connected to loudspeaker, each impact of an atom on the metal plate sounds like a pistol shot.

As the chief scientific advances during 1926, Dr. Free selected five items. First, in his opinion, are the investigations indicating that matter and light are fundamentally the same, atoms being merely a special condition of light rays.

This viewpoint has been developed mainly by Professor E. Schrödinger, a German mathematician, and by Dr. A. C. Lunn of the University of Chicago.

Cited as second was the work on the theory of catalysis, credited mainly to the scientists of Princeton University and of the fixed nitrogen laboratory of the United States Department of Agriculture. Catalysis is the process involved in some new methods of making artificial gasoline from coal and of nitrate fertilizers from air.

As his third item, Dr. Free selected the experiment of Dr. Fritz Paneth and Dr. Kurt Peters, two German physicists, which is believed to have demonstrated the conversion of atoms of hydrogen into atoms of helium, its importance being the hope that it will yield a clue to atomic power.

Mentioned as fourth was the work of Dr. H. Bechhold, another German, on living germs too small to be visible even in the best microscopes.

Fig. 3. The "Atom Counter," Which Makes Audible Individual Atoms Shooting Out From Particles of Radium or Other Radio-Active Elements.

The fifth item was an American discovery, that of other universes so distant from ours that light needs 140,000,000 years for the trip. This was made by Dr. Edwin P. Hubble of Mount Wilson Observatory.

Automatic Telephone Fundamentals

This Is One of Series of Articles Explaining in Simple Terms the Mechanical and Electrical Basis of the Strowger Automatic Telephone System, Which Appear Weekly in TELEPHONY — Part 11, The Plunger Line Switch Circuit

By Arthur Bessey Smith, Ph. D.

The circuit of the plunger type line switch which will here be discussed, has its duties divided into two parts:

First: Those duties which must be performed while the subscriber is calling into the exchange; and

Second: Those duties to be performed while the subscriber is being called by some other subscriber through a connector switch.

The details devolving upon the line-switch circuit while calling are:

1. Operate the plunger to extend the circuit to the first selector.
2. Clear the line of line relay and ground connections.
3. Drive away other plungers so that privacy of the trunk may be secured.
4. Protect the subscriber's line at the connector bank so that no connector can seize this line.

We will assume that the reader understands the mechanical structure of the Keith type line switch. This has been described previously. Each subscriber possesses a line switch consisting of a magnet and plunger, and a bank of ten sets of contacts. Corresponding sets of contacts from all the banks in a common group are wired to trunks leading to first selector switches.

All the plungers in a group are controlled in their normal position by a guide shaft, so that all will point toward a given trunk. This position is determined by a master switch, which possesses the ability to move the guide shaft away from any trunk which is busy.

The line switch circuit, Fig. 45, contains a line relay, *L. R.*, a magnet, a plunger arm, *P. A.*, and plunger with bank contacts. For the sake of clearances of circuits, the reader is asked to accept the diagram as it stands and to imagine that the plunger arm, *P. A.*, can act as indicated by the dotted lines upon the four springs, 1, 2, 3, 4, whose contacts, 5, 6, 7 and 8, lead to a trunk.

No attempt is made in this diagram to show the mechanical relation which actually exists, since we will at this point emphasize the electrical circuits.

The apparatus immediately connected with the line is quite similar to that found in manual common battery boards. It consists merely of a line relay, *L. R.*, connected from negative battery to one line wire (— *L*), while the other terminal of battery is connected to the other line (+ *L*).

A cut-off relay bearing two coils, *P. D. C.* and *B. C. O.*, can cut off the ground and line relay from the line circuit. For reasons to be explained later, the line relay is equipped with a copper collar so as to make it slow in falling back after the current through its winding has been cut off.

The magnet which drives a plunger into a bank and thus connects the bank springs and contacts, is operated by a very simple circuit extending from negative battery through a contact on the line relay to ground. It is a low resistance coil and possesses great power. When energized, it can operate not only the cut-off springs at the left, but the plunger arm, *P. A.*, at the right.

The trunk wires, three in number, are taken from the bank contacts, 5, 6, and 8, and run to the jacks of a first selector switch. The two trunk wires (— Trk. and + Trk.) run to the two windings of the line relay, *L. R.*, of the first selector and thence to the opposite terminals of the main battery.

The release trunk runs to the contact of a relay called the "release relay," whose function will be more minutely described when we treat the selector circuit. The purpose of the release relay is to ground the release trunk and thus secure the connection from being released as well as to guard it from intrusion.

Normally, no current can flow through the line circuit because it is open at the condenser in the subscriber's telephone.

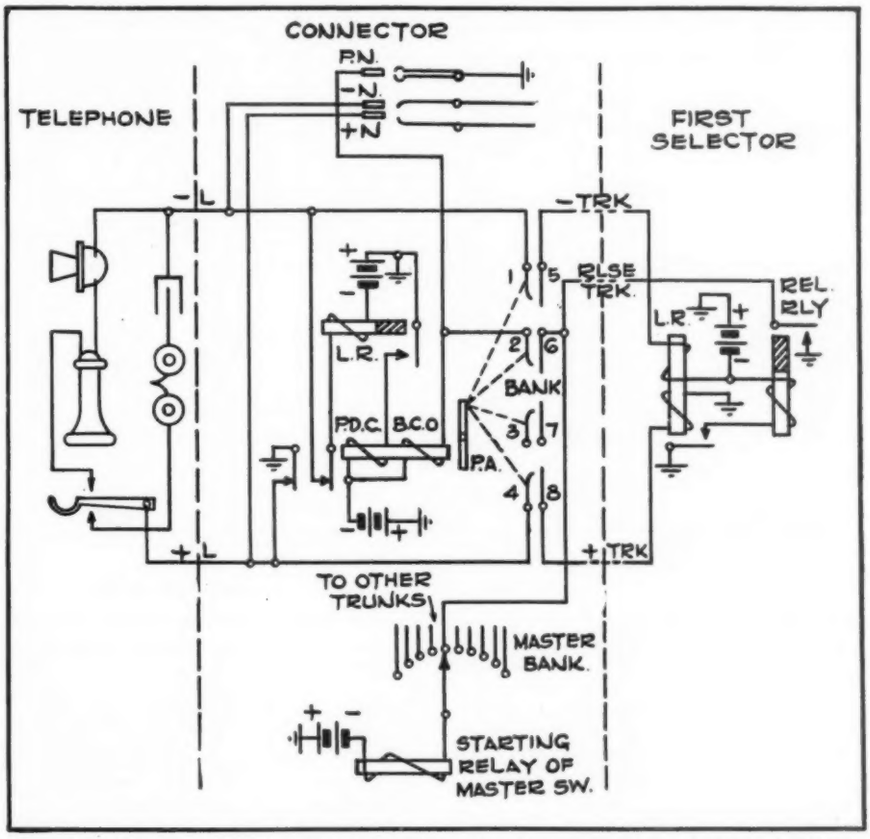


Fig. 45. Circuit of the Plunger Line Switch, Showing Connections to Other Switches.

This is precisely the condition which exists in every manual common battery switchboard. The circuit is, however, closed as far as alternating current is concerned and, therefore, under proper conditions, ringing current can be sent over the line to operate the bell.

When the subscriber desires to make a call, he first removes the receiver from the hook. This preliminary act will result in the operation of the line switch, extending his telephone line to the first selector and moving the plungers of all other subscribers in the same group, to other trunks. All this occurs without the subscriber's volition or knowledge, and is entirely preliminary to the operation of selecting a number.

The receiver being off the hook, current

flows through ground, through a back contact on the cut-off relay, through + *L*, through talking apparatus of the telephone, back to the central office through — *L*, through another contact of the cut-off relay, through the winding of the line relay, *L. R.*, to negative battery. The line relay, therefore, pulls up and closes the circuit of the pull-down coil, *P. D. C.*

This coil with one movement cuts off the line relay and ground and forces the plunger into the bank, closing each of the bank springs against its corresponding bank contact. Because the line relay is slow to release its armature, the pull-down coil will remain energized for a fraction of a second after the cut-off springs have been opened.

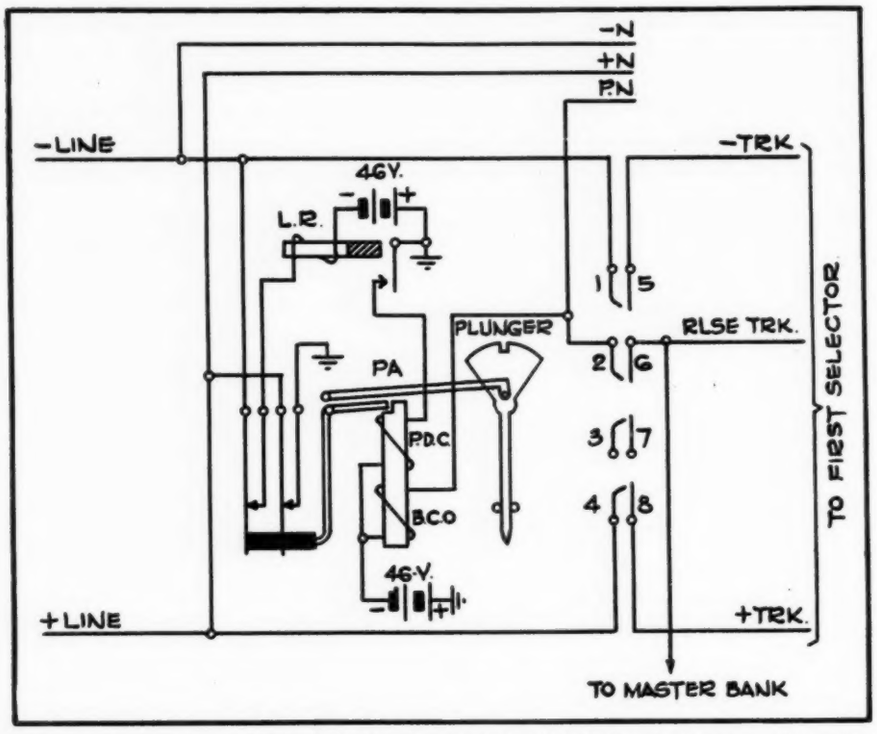


Fig. 46. The Plunger Line-Switch Circuit, Indicating the Mechanical Construction of the Pull-Down Magnet.

The line is now extended through contacs 1-5 and 4-8 to the line relay of the first selector which, pulling up, energizes the release relay of the same switch. The release relay places a ground upon the release trunk and thereby draws current through the bridge cut-off coil, *B. C. O.*, locking the magnet in its operated condition so that the line relay may now fall back, which it will do when its magnetic energy has been spent.

The same grounding of the release trunk by the release relay protects the call from two sources:

First: It places a ground on the private normal, *P. N.*, leading to the banks of the connector switches, whose duty it is to deliver calls into this group. Any connector which attempts to make a call will find this private normal wire grounded and will, therefore, be unable to complete the connection.

Second: It places a ground upon the contact of the master bank to which it is wired. This will energize the starting relay of the master switch so that the latter will remove the remaining idle plungers to some other trunk, which, at this moment, is not busy. Whenever the wiper belonging to the master switch bank finds an unground contact, the starting relay of the master switch will fall back and stop the guide shaft with the idle plungers ready to seize an idle trunk.

When a call is to be received from another line through a connector, the line switch must clear the line of relay and ground without operating the plunger. If the plunger were operated, it would necessarily occupy a trunk and first selector, thereby withdrawing them from being used by other people.

When a connector calls for a line, the test as to the condition of the line is made by means of the private wiper of the connector switch. If the private normal, *P. N.*, is found without a ground connection, the connector proceeds to put a ground on it as indicated in Fig. 45. This will energize only the high resistance coil, *B. C. O.*, of the line switch.

This coil is much weaker than the pull-down coil, *P. D. C.* It is able only to move the cut-off springs at the left, without affecting the plunger arm, *P. A.*, at the right, and serves to cut off the ground connection from + *L*, and the negative battery and line relay from — *L*, so as to leave the line perfectly free of any attachments.

A marginal action of the line-switch magnet is secured by arranging the two armatures at different distances from the pole of the magnet. (See Fig. 46.) A rectangular notch is cut in the end of the line switch magnet. The end of the armature which operates the cut-off springs is adapted to fit into this notch and to stand not very far away from the pole.

The plunger arm, *P. A.*, though pivoted on the same centers as the little armature, stands somewhat farther away from the pole. Thus, each armature has a different length of air gap and, consequently, a different amount of reluctance to the passage of magnetism. The pull-down coil, *P. D. C.*, is sufficiently powerful to create enough magnetism to attract both armatures.

The bridge cut-off coil, *B. C. O.*, has enough power to hold both armatures after they are once attracted. This is because when the armatures are in contact with the pole, the air gap is very short and, consequently, the reluctance very little.

The small number of ampere-turns will suffice to produce much more magnetism than could be produced by the same number of ampere-turns through a larger air gap. Hence, it follows that although it requires a greater mechanical force to pull the armatures into place than one would suppose, a weaker coil is successful in holding them because of the greater efficiency of the magnetic circuit when the armatures are against the pole.

When the private normal, *P. N.*, is grounded, current will flow through the *B. C. O.* and pull down the small armature at the left and cut off the apparatus as before described.

Although equipped with four sets of contacts, it will be noted that only three are used. In some cases the fourth one is required. Partly for this reason, and partly to secure an equality of pressure on the plunger rollers, all line switches are made up with the full number of contact springs. *(To be continued.)*

Long Distance Lines in Manchuria Equipped With Amplifiers.

The Societe Francaise des Telephones Interurbains of Harbin, an important city in Manchuria where some 25,000 Russian refugees have settled, recently made tests of telephone communication over long distance lines equipped with French amplifiers installed at Mukden. The results obtained were satisfactory, it is reported. Conversation between Mukden and Harbin and Mukden, Harbin and Peking was successfully carried on.

The telephone line between Mukden and Changchun, which was repaired by the French company recently, is now connected with the already-equipped telephone line between Harbin and Changchun. Changchun is now able to speak with Tientsin and Peking quite distinctly, according to the latest tests. At present tests are being made with the same telephone amplifiers for direct communication between Harbin and Tientsin and Harbin and Dairen.

Equipment of Two Oklahoma Plants

Oklahoma-Arkansas Telephone Co. Has Excellently-Equipped Exchanges at Poteau and Heavener—Latter Plant Recently Rebuilt and New Equipment Installed—Rich Territory Served Through Four Exchanges and Five Agencies

Rich in the traditions of Indian legend and the struggles of those sturdy pioneers who first crossed our western plains, LeFlore County, Oklahoma, presents some interesting data to the student of American history.

Gregg in his "Commerce of the Prairies" tells a thrilling story of a trip to Santa Fe which followed the northern boundaries of the county along the Arkansas River. Mounds in the region of Fort Coffey in the northern part of the county tell the story of prehistoric people at whose life and habits we can only guess.

Today LeFlore County has 15 railroads within its boundaries, is blessed with such natural resources as coal, gas and oil, and in addition has 300,000 acres of fertile soil. Agricultural products include corn and hogs, feed, poultry, potatoes, fruit and alfalfa.

Good roads traverse the county, and fine fishing and hunting offer recreation to the visitor and tourist.

LeFlore County has the reputation of exceeding the average county in public utilities, and we may, therefore, naturally expect to find good telephone properties within its boundaries.

In this we are not disappointed, for the Oklahoma-Arkansas Telephone Co. with headquarters at Poteau, the county seat, owns and operates a model plant with exchanges at Poteau, Heavener, Wister and Howe, and with agents at Monroe, Bates, Coaldale, Cauthron and Waldron. A system of toll lines connects the various exchanges and agents. The company owns toll lines running into Fort Smith, Ark.

Exchange Building of the Oklahoma-Arkansas Telephone Co. at Heavener, Okla.

The Poteau Telephone Co. was organized in 1900 with a total of 25 magneto telephones. In 1920, it had grown to 800 and since that time has had a much more rapid growth, closing the year of 1926 with over 1,300 subscribers.

In 1923 the company was incorporated and its name changed to the Oklahoma-Arkansas Telephone Co. I. H. Nakdimen is secretary-treasurer, E. J. Mendell is auditor and John P. Youman is manager in its present organization.

The most modern and up-to-date telephone plants are located at Poteau, which has a population of 3,500, and at Heavener with a population of 2,500. So fine is the service maintained by this company that when the purchase of new equipment was contemplated for Heavener, together with a complete rebuilding of the plant, business men and the city officials endorsed the application for a raise of rates on the basis of the service already given at Poteau.

At that time the Oklahoma Corporation Commission complimented the company on its up-to-date exchange at Poteau, making this statement:

"It is one of the most modern and up-to-date plants for its size anywhere; the service is excellent; observation and comparative studies of methods employed in other plants of similar size operating on a common battery basis disclose the Poteau equipment to render superior service and to be lower in cost of operation and upkeep."

The case was given publicity in TELEPHONY of August 11, 1923.

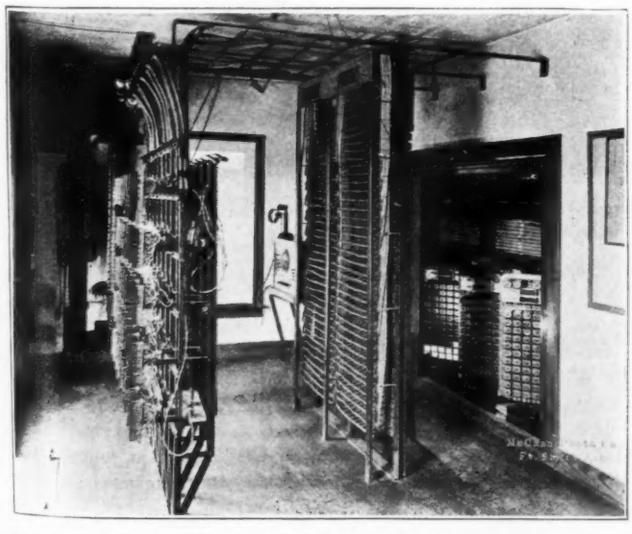
Both Poteau and Heavener are equipped with Kellogg service switchboards, the Poteau equipment consisting of a three-position section with 600 common battery, 20 rural and 10 toll lines.

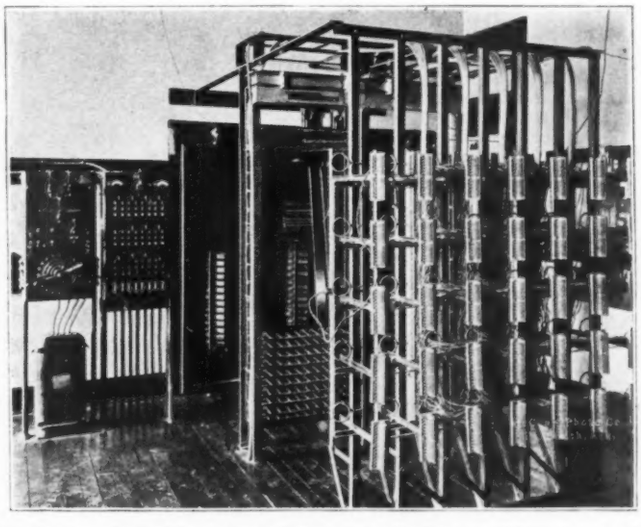
The Heavener equipment consists of two single-position sections with an ultimate capacity of 1,200 lines, 400 equipped. Both installations are equipped with full features embodying among others:

Multiple line lamp call distribution.
Keyless listening.
Calls automatically registered.
Audible multiple busy test.

Machine ringing; revertive ringing tone to the calling subscriber; ringing controlled by calling subscriber; ringing cut-off.

Operators' automatic cut-off.





Terminal Room at Poteau, Okla., With Rear View of Kellogg Service Switchboard—The Terminal Room at Heavener, Okla., Showing Power Board and Mercury Arc Rectifier.

Corner of Operating Room, Heavener, Okla., Showing Kellogg Service Switchboard.

Positive supervisory signals.
Dark keyshelf.
Instantaneous disconnect.
Instantaneous line lamp recall.

The prospects for a continuation of the steady growth for this utility are very bright. LeFlore County with its good schools, fine churches, good roads and natural resources offers opportunity to the business man with money to invest, and Oklahoma is now carrying on a national advertising campaign to interest such investors.

Poteau and Heavener are exchanges of which any city might be proud. Under the able managements of Mr. Youman and Mr. Mendel in the commercial department, with the splendid assistance of Homer Brehm, wire chief at Poteau, and Gordon Bryan, wire chief at Heavener, on the equipment end of it, they are making a success of the business.

A utility company with the vision and foresight of the Oklahoma-Arkansas Telephone Co. cannot fail to be prosperous and to be an important factor in the prosperity of the county and state.

"Up in Air" on Model Cable Plant at Heavener, Okla.

Continental Company Purchases Nebraska Plant of 500 Stations.

Announcement is made of the purchase by the Continental Telephone Co., of Lincoln, Neb., and St. Paul, Minn., which recently acquired plants at Columbus, Kearney, Albion, Ord and other places in Nebraska, of the Central Telephone Co., of Greeley, Neb., entirely owned by local men. The announced consideration for the property is $44,000.

The last report of the Greeley company showed assets of $51,000, a capital stock of $30,000, surplus of $5,700 and a depreciation reserve of $14,000. It serves 516 stations, and the annual revenue was $10,637 and expenses $7,165.

Telephones Thrown Into Power, Light and Gas Holding Company.

The 64 telephone exchanges that the McGraw Electric Co. has lately secured in purchases, largely in Iowa and adjoining territory, are included in a ten-million-dollar merger that was recently announced. The McGraw company will own all the common stock in the consolidated company which will be known as the Central West Public Service Co. with headquarters at Omaha, Neb.

As part and parcel of the merger are also all the properties in various parts of the Middle West owned by W. N. Albertson, incorporated, of Milwaukee, and Mr. Albertson is the new president and general manager. He has already moved to Omaha, where the McGraw company has purchased an office headquarters building.

There is also included in the consolidation the property of the Platte Valley Power Co., which operates in a number of smaller eastern Nebraska towns, and that of the Dakota Public Service Co., which owns and controls 50 public utilities in the two Dakotas.

The company owns ten electric generating plants and over 600 miles of transmission wire. In all the utilities will supply 64 communities with telephone service; 59, either directly or at wholesale, with electric current; four with gas and one with water.

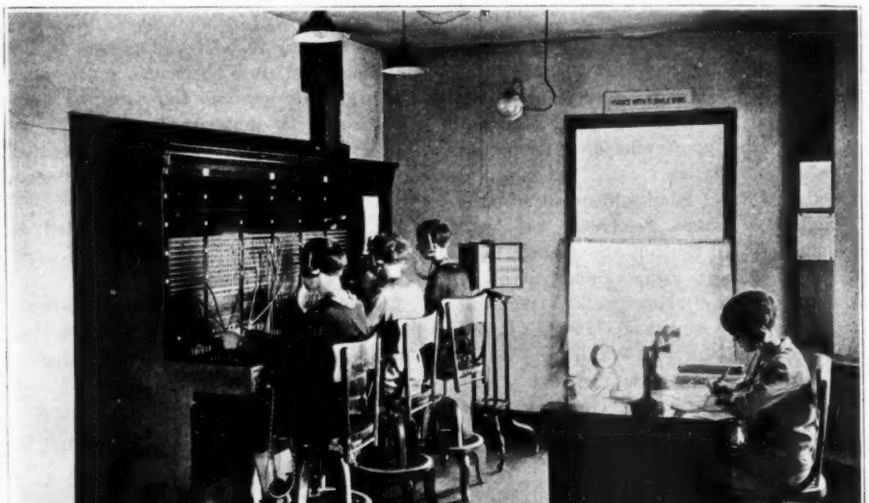
In Nebraska the company will furnish either gas, telephone, or electric service to the towns of Mead, Yutan, Venice, Valley, Waterloo, Elkhorn, Columbus, Nickerson, Leshara, Colon, Hooper, Winslow, Fontanelle, Bennington, Washington, Kennard, Herman, Albion, Norfolk, Dakota City, Jackson, Crystal Lake and Saunders Beach.

Company at Warren, Ohio, to Be Purchased by Chicago Concern.

The Warren & Niles Telephone Co., which has been giving telephone service in Warren, Ohio, for the past 25 years, will shortly be in the hands of another company, the Middle West Telephone Co., of Chicago. An offer of purchase has been considered for some time by the board of directors and stockholders have been advised to sell.

The bidders offer $155 per share of stock. There are $5,000 shares outstanding, the par value of which is $100. The Middle West has recently purchased exchanges in Mt. Sterling and Gilead, Ohio, and is said to be contemplating the purchase of others.

E. G. Miller, present manager, is to be retained by the new company, while Attorney Washington Hyde, who at present heads the local company, is to be retained as counsel by the new organization.



Operating Room of Oklahoma-Arkansas Telephone Co. at Poteau, Okla., in Which Kellogg Service Switchboard Is Installed.

AUTOMATIC

ve 24-hour
ice

's (Community Auto-
mall towns and rural
ephone service every
old-time necessity for
ring the night (due to
when it is often most
done away with by

middle of the night as
day. Its service is
s capable of handling
utmost rapidity and
automatic and are
ans; no operators are

re available in types
few as a half dozen
hin the reach of the
ns.

ctric Inc.

West Van Buren Street
A.

C-A-X

One of the following types of C-A-X's will solve your small exchange problem:

Type 15: A connector-per-line system, with a maximum capacity of 12 lines (including trunks) per unit. Uses existing magneto telephones.

Type 16: A common battery line-switch-connector system, with an initial capacity of 75 lines.

Type 17: Same as Type 16 except for the addition of selectors, providing immediate facilities for expansion.

Type 18: A line-switch-connector system using existing magneto telephones, and having an initial capacity for 75 lines.

Type 19: Same as Type 18 except for the addition of selectors, providing immediate facilities for expansion.

More Than 3,500,000 Strowger Automatic Telephones in Service or on Order Throughout the World

EQUIPMENT

When writing to Automatic Electric Inc., please mention TELEPHONY

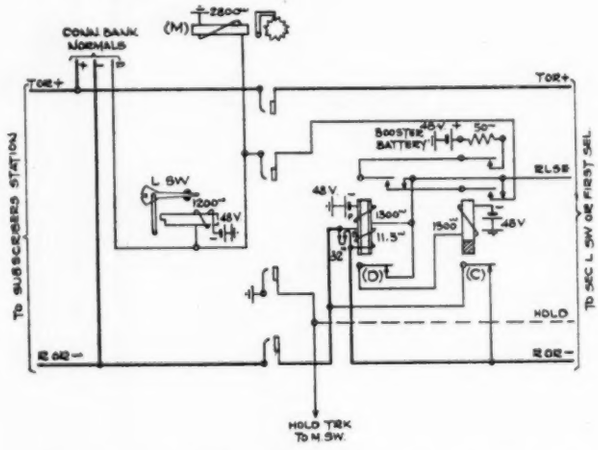
Message Rate Service in Strowger Automatic Systems

Circuit Description for Individual Line "Booster Battery" Registration

by H. R. PARSHALL
Director of Technical Publications, Automatic Electric Inc.

IN the preceding article the general requirements for the "booster battery" method of registration for individual message rate lines was discussed. The following is a description of the circuit operation for this method of registration. Referring to the accompanying figure, it will be seen that when the primary line switch functions the subscriber's line is connected to an idle trunk and through the message register controlling relays to the switch ahead, when the calling subscriber removes the receiver from the hook switch to initiate a call.

Ground connected to the release lead (Rl'se) by the functioning of the switch ahead closes a local circuit through the 1,200 ohm B. C. O. winding of the primary line switch; closes a local circuit through the 1,300 ohm polarizing winding of controlling relay "D"; closes a local circuit through a set of make contacts on relay "D" to the 1,300 ohm winding of controlling relay "C"; and closes a local circuit through the 2,800 ohm winding of the message register (M).



Due to its marginal adjustment the message register will not operate at this time.

Relay "C" operating disconnects the primary line switch release lead through a set of break contacts on relay "C", from the release lead associated with switch ahead and reconnects these leads, through a set of break contacts, on relay "D" and a set of make contacts on relay "C". At the same time the common 45-volt positive potential booster battery is connected, through a 50 ohm non-inductive resistance and through a set of make contacts associated with relay "C", to an open contact on relay "D"; thus preparing the circuit for registry of the call at the time the called party answers.

Relay "C" operating also removes the shunt from around the 11.5 ohm winding (S) of relay "D" which is connected in series with the ring side of the trunk. Windings "P" and "S" of relay "D" are differently connected with the circuit—in order to prevent relay "D" from operating at this time.

In case the called subscriber's line is not engaged, after the connection is established and the called party answers, the polarity of battery, being supplied over the trunk to the calling subscriber's station, from the connector switch, will be reversed. This reversal of polarity, in current flowing over the trunk, causes the magnetic force, produced by this current flowing through the 11.5 ohm winding to assist the magnetic force produced by the current flowing through the 1,300 polarizing winding of this relay, causing relay "D" to operate.

Relay "D" operating, opens the release lead (Rl'se) associated with the switch ahead and connects the 45-volt positive potential booster battery to the release lead associated with the primary line switch. The increased current, resultant from this operation, flowing through the 2,800 ohm winding of the message register, actuates the message register.

At the time relay "D" operates, the local circuit through the 1,300 ohm winding of relay "C" is opened, causing relay "C" to release. Relay "C" is of the slow releasing type, therefore, it is sustained momentarily in an operated position after its local circuit is opened.

Relay "C" releasing, disconnects the 45-volt positive potential booster battery from the release lead associated with the primary line switch and reconnects this lead through to the release lead associated with the switch ahead.

The interval of time during which the booster battery is connected to the release lead by the operation of relay "D", and until it is disconnected again from the release lead by the restoring of relay "C" is of sufficient duration to allow the message register to function. Due to a marginal adjustment, after being operated, the register will be held in an operated position during the remaining period of connection, from the 48-volt battery connected, through its 2,800 ohm winding to ground on the release lead.

Relay "C" releasing further, replaces the shunt around the 11.5 ohm winding of relay "D" thus removing it from the talking circuit to improve transmission and to maintain the trunk in perfect balance.

As is the case when the "reverse battery" method of message registration is employed with this method, "don't answer", "busy", "aberrated", or "free" calls are not recorded.

Conversation on "free" calls must be held through the series winding of relay "D", however, a 32 ohm non-inductive resistance is connected in multiple with the series winding and in addition to this a copper sleeve is placed over the core of relay "D", so that the impedance of this relay to voice currents will be so low that transmission losses will be negligible.

This is No. 10 of a series of articles prepared by members of the Engineering Staff of Automatic Electric Inc., covering technical features of the Strowger Automatic Telephone System.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Consolidation Methods Criticized in State Commission's Ruling.

A petition of the Associated Telephone Co., whose officers are Indianapolis men, to be allowed to purchase three northern Indiana telephone companies, for a total of $135,000 was denied by the Indiana Public Service Commission on February 28 in an order which contained scathing criticism of methods used in attempting to affect the consolidation.

In denying the petition, the Indiana commission held that the valuation of the three companies—the Walkerton and the North Liberty Telephone companies in St. Joseph county and the Nappanee Telephone Co. in Elkhart county—is only $125,000, or $10,000 less than the price proposed.

The order, written by Commissioner Clyde H. Jones, was approved by John W. McCardle, chairman, and Howell Ellis, commissioners. Commissioners Frank Wampler and Frank T. Singleton concurred in the denial but did not concur in discussion of the case.

In addition to finding a lower value than that estimated in the petition, the commission held that a request for authority by the Associated Telephone Co. to issue $191,000 in securities could not be granted because this is in excess of the fair value of the property.

Members of the commission pointed out that there are ten other telephone companies in the northern part of the state which officers of the Associated company propose to take over and that these ten petitions are now pending and have not been acted upon by the commission; that Carl H. Mote, Indianapolis attorney, is president of the Associated company, with Samuel Mantel, assistant to Mr. Mote, as secretary; L. C. Loughry, treasurer, and Mrs. Mary Shields, a director.

The original petition was filed in October, 1926. The order, which contains some of the information gleaned during a hearing on the petition, indicates that the directors and executive officers of the petitioning company are not expecting to manage the properties, but that this would be done through J. G. Wray & Co., local superintendents.

In a statement characterizing the consolidation as "clearly a promotion scheme" the commission's order says:

"We are of the opinion that the price at which it is sought to purchase said property exceeds the fair value by $10,000. We think that the financial structure shows clearly a promotion scheme. We think that the proposed plan of operation would not enure to the benefit of the user, or render it any cheaper or more efficient, but perhaps more costly and less satisfactory; and for all these reasons feel that the prayer of the petition should be denied.

"The members of the commission were astounded a few days ago when there was placed in our hands a 'circular' and 'sales memoranda' purporting to be issued by the United Telephone Co., to which company reference heretofore is made in this order. It appears that said United Telephone Co., a Delaware corporation, is to be the holding company for the companies involved in this petition, and ten other companies in Indiana.

"The plan is to deposit all of the mortgaged bonds and stocks of these companies with the said United Telephone Co., as a holding company, so as to insure the absolute control of these subsidiary companies by the United Telephone Co.

"Such circular and sales memoranda are advertising the sale of securities of said holding company, based on securities issued on Nappanee, North Liberty and Walkerton Telephone companies, 13 in number, embraced within the proposed consolidation, for which authority to issue the same has never been granted by this commission, and such authority is now being sought.

"If the matters contained in these circulars are true, we should feel constrained to disapprove the whole scheme on their contracts alone because the circular shows that a foreign holding company, over which we have no control or jurisdiction, is to dominate these companies.

"This is the first case of which we have any knowledge where promoters have been so presumptuous as to anticipate a favorable decision of this commission; and in pursuance of such anticipation, advertised and offered securities for sale in advance of our approval. Such promoters and their lawyers must be made to realize that obtaining the approval for the issues of securities by this commission is not a perfunctory matter.

"We especially invite the attention of the petitioner's attorneys, and others who have business here, to the rules and suggest that they read it carefully and digest its contents as it embodies our attitude on these questions.

"The merest sense of ethics and decency, and the proper regard and respect for the law and for this commission, would dictate that petitioner should not advertise securities until the matter shall have been decided by this commission. Such unblushing affrontry merits the strongest condemnation.

"If those engaged in this matter were inexperienced in utility practice it might, in a measure, condone the disrespect thus shown; but on the contrary, all connected with it are experienced and familiar with utility practice and thoroughly conversant with the effect of such action.

"Therefore, we conclude that nothing short of sheer contempt for our judgment and discretion explains this disrespectful conduct.

"We have sought, in reaching a conclusion of this matter, to not allow this unseeming conduct to influence our decision, and we feel that the matter has been decided upon its merits; but were we in doubt as to what our decision should be, conduct of this character might properly warrant us in rebuking them by denying the claims of the petitioner.

"We find that the prayer of the petitioner to purchase and sell the property should be denied, and it will be so ordered; consequently the right to issue securities must fail."

Bell Installation Case to Full Massachusetts Supreme Court.

Judge Carroll in the Massachusetts Supreme Court last month reserved for the consideration of the full bench the questions of law arising on the petition of the New England Telephone & Telegraph Co. for a review of a decree of the Massachusetts Department of Public Utilities ordering the telephone company to install service in one of the rooms of the Hotel Statler, Boston.

The judge was informed by counsel for the telephone company that there was no longer a controversy between the company and the hotel, and that the company was engaged in furnishing service to all parts of the hotel, except the room in which the Department of Public Utilities decreed that the work must be done

It was also stated that a decision on the disputed point is not only important to the telephone company but is also of general interest to the telephone industry.

Order Amended to Include Extension and Individual Service.

The Nebraska State Railway Commission has amended its rate order in the case of the Cortland Telephone Co. to allow it to include a 50-cent charge monthly for extension service and also the same rate for business and individual line service, in addition to rates authorized for respective party-line rates. These are the same as asked for.

The manager of the company told the

commission that at present only one party in Cortland is being furnished individual line service and that two subscribers are using extension instruments.

The commission says that it is apparent that the additional revenue which would be derived from the proposed rates does not warrant an investigation of additional profits that might accrue. The proposed differential being reasonable and conforming to general practices previously approved, the rates were allowed to be added at once to the existing schedule.

Rate Application Denied; Failed to Justify Increase.

The Minnesota Railroad & Warehouse Commission on March 3 denied the application of the Akeley Telephone Co., Akeley, for authority to change its schedule of rates. The Akeley Telephone Co., owned by F. E. Olson, operates a local exchange serving local and rural subscribers, and performs a switching service for a number of rural companies whose lines are connected with the Akeley exchange for service.

The petitioner asked authority to increase its rural switching rate from 30 cents per telephone per month net to $6 per telephone per annum gross with a discount of $1.00 if paid within the first month of the year for which service is to be rendered.

An operating statement was submitted in which Mr. Olson showed the operating revenues for the 11 months' period from July 1, 1925, to June 1, 1926, amounting to $3,101.25 and total operating expenses for the same period, including taxes, amounting to $2,952.02.

Mr. Olson performs all construction and maintenance labor himself for which he takes a salary $75 per month. A portion of his time is used in the operation of the switchboard. The only other employes are two operators at $6 per week. Considering the total amount paid out for wages, a portion of which is chargeable to the fixed capital account and not to operating expense and making allowances for materials required for maintenance, expenses for rent, light and heat, insurance, etc., the estimated annual operating expense would appear to be not in excess of $2,200 per annum.

"It is evident," said the commission, "that the accounting requirements of this commission are not carried out and that gross errors were made in the preparation of the operating statement filed as an exhibit in this case. The petitioner also filed an exhibit attempting to show the cost of switching rural lines. This exhibit includes a large amount of expenses not applicable in the determination of such a cost study and does not include certain other items which are applicable.

Upon review of the facts, the commission found that the evidence failed to justify the proposed increase in rates. Because of apparent errors in accounting, it was impossible to determine the actual operating expenses. The petition was, therefore, denied without prejudice.

Commission Wishes Authority to Use Discretion As to Reports.

The Nebraska State Railway Commission, by a bill that has received the approval of the senate so far, is to be authorized to use its own judgment as to the character of the reports it will require the public utilities under its control to make to it periodically.

When the commission was created, the legislature undertook to list, by law, what reports must be supplied. That was nearly 20 years ago, and since then a number of these items or reports have fallen into disuse and represent a constantly increasing pile of documentary junk, much of which has never been removed from the original envelope. The commission meanwhile has exercised its general authority, or big stick, in getting whatever additional data it needs or requires.

The bill is asked for by the commission so that it may remove from its files a vast amount of accumulated data for which no use exists, and which the legislative committee reported was increasing so rapidly that an addition to the state house might soon be demanded.

One of the items called for by the present laws is a list of stockholders. The canny legislator who drew that had in mind the possibility that this would be of value in checking up a man's personal interest in legislation, but the commission experience has been that nobody ever asked to see a list, except stock salesmen who used it as a prospect list to either sell new stock or trade the new for the old.

Authority Granted to Issue Bonds for Corporate Purposes.

Permission has been granted by the Nebraska State Railway Commission to the Dundy County Mutual Telephone Co., of Benkleman, to sell at par its 10-year mortgage bonds in the sum of $3,000 with interest not to exceed $3,000, none to be issued until the constitutional requirements of 60 days' notice is given.

The balance sheet of the company as of November 30, 1926, shows total plant and equipment value of $12,458 and an item of $5,044.27 due from subscribers and agents, or a total of $18,020. The company has $2,250 of outstanding stock, advance payments by subscribers of $4,594.57, accounts payable of $445.99, and notes payable of $2,400.

The bonds were asked for so that the note indebtedness might be retired and the debt represented by a long-term bond issue. The other $600 is wanted in order to take care of necessary construction in making the entire plant metallic, now partly grounded only.

The commission says that the recheck shows a property value of $10,356.25, and that after the financing is complete, the total stock and mortgage debt would be well represented by property. It is also found that the earnings of the company are adequate to meet bond interest and pay all operating expenses.

The issuance of the bonds would undoubtedly place the company in a much better financial position and permit of necessary improvement to its service and construction of additional plant. Being reasonably required for corporate purposes, authority is granted.

Completes Reconstruction Program and Wants to Issue Stock.

The Stella Telephone Co. has completed an extensive reconstruction program and made application to the Nebraska State Railway Commission for authority to cover its expenditures with a stock issue. It desires permission to issue $7,000 as a stock dividend, representing past sacrifices of stockholders, and $16,000 to take up the notes payable and pay off other items of indebtedness accruing by reason of the rebuilding.

The company operates in a well-settled and prosperous section of the state, and with its new board and new lines is offering a greatly improved service.

Ohio Bell Case Submitted to Commission.

The Ohio Bell state-wide rate investigation closed late last month and the case is now in the hands of the Ohio Public Utilities Commission for decision on the tentative value of the company's property for rate-making purposes.

The present inquiry closed with the cross-examination of H. B. Taylor. It is regarded as probable that the commission will at once go into a study of the record in order to allow its two new members to become familiar with the testimony and that the tentative value of the property will be taken up without further inquiry being made.

Over the objections of attorneys for the Ohio Bell Telephone Co., testimony was admitted to show the financing of the constituent units of the old Ohio State Telephone Co. This company was absorbed by the Ohio Bell in September, 1921.

The book value of the Ohio State, at that time, was $28,783,821, which was taken as the basis of valuation for the merger. This valuation, attorneys for the state contended, is still carried on the books of the Bell company.

Pacific Bell Operating in Portland, Ore., Without Franchise.

The Pacific Telephone & Telegraph Co. is now operating in Portland, Ore., without a franchise. Twenty-five years ago on February 19, the city council granted a franchise to the Pacific States Telephone & Telegraph Co., the ordinance being

They Are Serving In KANSAS

Texas "Black Beauty" Creosoted Southern Yellow Pine Poles are lowering annual costs per pole mile for the **United Telephone Company,** in Kansas.

Endowed by Nature with great strength and ability to withstand the severe bending stresses occasioned by storms, these selected Pine Poles are insured almost indefinitely against loss of bearing strength by being creosoted, full length, by the vacuum-pressure method.

Deep and uniform penetration of the preservative oil into the sapwood is secured; and the poles are thus rendered chemically inert and toxic to decay-producing fungi, termites, woodpeckers and other destructive agents.

If you, too, are interested in lowering costs by safeguarding against ice and wind storms, expensive service interruptions and replacement costs, it will pay you to investigate Texas "Black Beauty" Poles.

Texas Creosoting Company
Main Office and Plant: Orange, Tex., U. S. A.

American Electric Co., Inc.
Agents—Chicago, Ill.

2T7

Texas "Black Beauty" Poles

When writing to Texas Creosoting Co., please mention TELEPHONY.

passed on February 19 and approved by H. S. Rowe, mayor, on February 21. It was accepted by the telephone company on April 9. That franchise expired at midnight, February 19 of this year.

The company has submitted a new franchise to the council, also for 25 years, but the council has declared that it will not pass it. The company has offered a limited amount of service to the city over the 25-year period, changing the limit every five years and agreeing to pay the difference in cash if the city does not use to the limit. This does not meet with the approval of the council.

Commissioner Mann has been delegated by the city council to gather data in connection with a new franchise and Frank S. Grant, city attorney, also is making investigations for the city. A hearing on the proposed franchise will be held and from it some suggestions may develop that will be worked into the new franchise.

In the meantime the company will continue to operate.

Sale of Green River, Utah, Property to Bell Approved.

The Interstate Commerce Commission on February 14 authorized the acquisition by the Mountain States Telephone & Telegraph Co. of the telephone properties of Hulda J. Green, individually, and as guardian of the estate of L. H. Green, a mental incompetent, doing business as the Green River Valley Telephone Co. at Green River, Utah.

The vendors own in undivided one-half interests, and operate an exchange at Green River, Utah, which serves 135 subscriber stations. The toll lines of the Mountain States company connect with the exchange of the Green River company.

On November 8, 1926, the Mountain States company contracted to purchase the telephone properties of the Green River Valley Telephone Co. for $5,000. The court in charge of the estate of the mental incompetent has entered an order authorizing the sale of his undivided one-half interest for $2,500.

An appraisal made by engineers of the Mountain States company finds the reproduction cost new of the properties, less depreciation, to be $3,686.16. The estimated value of plant to be retired from service is $869.

In 1926, the revenues and expenses of the Green Valley Telephone Co.'s exchange were $2,458.15 and $2,715.14, respectively. No change in rate schedules is in immediate contemplation.

The physical condition of the properties is such that it will be necessary to rebuild the plant and to make various extensions. This will require a comparatively large outlay of new capital which the Green Valley Telephone Co. is unable to provide. The Mountain States company will install at once the necessary equipment to give the community satisfactory service.

Wisconsin Telephone Companies May Adjust Toll Rates.

The Wisconsin Railroad Commission on February 24 issued an order specifying the procedure to be followed by any telephone company in Wisconsin desiring to place in effect the same schedule of toll rates as those of the Wisconsin Telephone Co., or other schedule substantially identical therewith.

Any company which desires to make this schedule of toll rates effective, is required to file exhibits with the commission which contain:

(1). A complete schedule of toll rates in effect December 23, 1926, which schedule shall contain the basis of computation as to initial rates, overtime charges, person-to-person and station-to-station rates, if any; and, in addition, shall contain a list of all points between which such rates were effective.

(2). A schedule of the rates which it is proposed to make effective, together with the basis of application as to all features contained in the schedule, and a list of all points between which such schedule shall be made effective, together with the basic station-to-station rate between each two such points.

On December 23, 1926, the commission entered an order by the terms of which the Wisconsin Telephone Co. was authorized to discontinue its existing rates for intrastate toll service and to place in effect a modified schedule set forth in detail in the opinion accompanying the order. This schedule is identical with the toll rates in effect for interstate rates on the Bell system and with the intrastate rates in something like three-fourths of the states. Jurisdiction was retained in the Wisconsin Telephone Co. case for the purpose of making any modification which may appear proper.

On January 10, the Wisconsin State Telephone Association through Secretary W. L. Smith, filed with the commission an application reciting that inasmuch as the order of December 23, applied only to messages transmitted entirely over the toll lines of the Wisconsin Telephone Co. and to those transmitted jointly over the toll lines of that company and connecting companies, confusion resulted among the Independent telephone companies.

The association had investigated the situation for the purpose of enabling the Independent companies to adopt the same rates and rules as those of the Wisconsin Telephone Co. and the application of the association was, therefore, filed on behalf of its members, seeking authority for the Independent companies to place in effect the same schedule of toll rates as that of the Wisconsin Telephone Co.

There are a considerable number of Independent telephone companies in the state, not members of the association, and, therefore, the commission on January 11, issued notice of investigation, on its own motion, to all telephone companies of record with it, other than the Wisconsin Telephone Co.

The telephone toll rate situation in Wisconsin is one of great variety. There are many clear trunk lines in the state on which no toll rate is charged; there are others on which nominal rates designed only to place some restriction on the traffic are in effect; and there are others upon which rates approaching the general level of the toll rates of the Wisconsin Telephone Co., or identical with the toll rates of that company, which were superseded by the order of December 23, are effective.

In some instances the revision of the toll rates of the Wisconsin Telephone Co. has resulted in confusion which can only be eliminated if the Independent companies involved are authorized to file the present schedule of the Wisconsin Telephone Co. For example, between La Crosse and Sparta there are toll lines owned by the Wisconsin Telephone Co. and toll lines owned by the La Crosse Interurban Telephone Co. Under an operating agreement between the companies, no distinction is made in routing the traffic from La Crosse to Sparta.

The total revenue from such traffic is divided on an agreed basis and the operators route a message over any available idle line without reference to its ownership. This makes the satisfactory application of differing rate schedules virtually impossible.

There are a number of other situations in the state where similar conditions exist, and there can be no question as to the desirability of removing the differences in schedules in such cases.

"We know," said the commission, "of no reason why the cost of furnishing toll service should not be as great for any given standard of service, to an Independent telephone company as to the Wisconsin Telephone Co.; and, assuming that the standard of service is identical, there is no reason related to the cost of service why the rates should not also be identical.

"A general order issued at this time, which would require or authorize, without restriction, the imposition of the standard Bell toll schedule over all Independent toll lines in the state would, however, have the effect of eliminating all free toll service now furnished and eliminating all nominal toll rates whose purpose has been merely to restrict the unnecessary use of the lines.

It is not the intention of the commission by the order now to be entered, to authorize the elimination of free toll line service or of nominal toll rates. If there is occasion for eliminating free service or nominal rates, the cases involving such elimination will be tried individually on their merits."

In its order the commission specified that where two or more Independent companies jointly own a toll line or lines, the filing may be made in the name of the joint

WHITE ENTERS LOW PRICE LIGHT DELIVERY FIELD

Announcing Reduced Prices
Placing WHITE Transportation within
the Reach of Everyone

Model 15 ¾-1 TON CHASSIS		Model 20 1½ TON CHASSIS
$2150 NET	← OLD PRICES →	$2950 NET
$1545 F.O.B. FACTORY	← NEW PRICES →	$2125 F.O.B. FACTORY
$605	← SAVING →	$825

WHITE transportation is today within the reach of every field of business and industry. Because of the increasing demand for quality truck performance, The White Company announces a broadening of its merchandising policy resulting in reductions in the prices of two models of four-speed light delivery trucks.

White is extending its area of transportation service—entering a wider field of fast, light delivery and establishing a complete range of truck capacity and price never before equaled by any high-grade truck manufacturer.

The name and reputation of White is insurance of continued high quality. These are the same high-grade White Trucks—at lower prices—the same standard specifications. For years the four speed White Model 15 and Model 20 have been the outstanding quality trucks in the light delivery field. No truck of the same size or capacity (¾-ton, 1-ton and 1½-ton) compares with them in dependable, low-cost transportation over hundreds of thousands of miles.

Throughout the chassis construction of the White Model 15 and Model 20 you will find inbuilt quality, ruggedness and exclusive White mechanical features that are not duplicated in any other light delivery truck at any price.

THE WHITE COMPANY, CLEVELAND
Please send me complete specifications, etc., covering White Light Delivery Trucks at reduced prices.

NAME .....
FIRM .....
STREET .....
CITY .....

Telephony

Terms—Operators wishing to buy trucks on terms can do so

THE WHITE COMPANY, CLEVELAND

WHITE TRUCKS

and WHITE BUSSES

When writing to The White Co., please mention TELEPHONY.

owners upon submission of other information required.

The commission also reserved the right to require further information in connection with any proposed filing in case such information appears necessary.

Jurisdiction in this matter is retained for the purpose of modifying or amending the order or any schedule of rates filed in accordance with its provisions, if such modification or amendment appears proper. No company or companies may place in effect any schedule of toll rates, other than those in effect December 23, 1926, without first having submitted such schedule to the commission and secured its approval.

Replacement Charge for Desk Sets and No Increase in Rate.

The Wisconsin Railroad Commission on February 28 granted the petition of the Mosel & Centerville Telephone Co., Cleveland, to establish a charge of $5 for the replacement of a wall telephone with a desk telephone and for the installation of a desk telephone for a new subscriber.

The petition was filed following the request of a number of the company's subscribers for desk sets to replace the wall type telephones now in use. Compliance with such a request would naturally entail a considerable expenditure of money which the company could not warrant in view of its earnings under the existing rates. The rate in effect for the wall telephones was $1.50 per month for all subscribers.

It is generally recognized that desk telephone service is more expensive to the utility than wall telephone service, and although there is a growing tendency to recognize the desk telephone as standard, a number of utilities make a charge for desk set service of 15 or 25 cents a month in addition to the regular rate for wall telephones.

This differential rate is, perhaps, more desirable, in general, than the flat replacement charge, but the conditions governing the operation of the Mosel & Centerville Telephone Co. are such that the investigation led the commission to believe that the interests of subscribers and company, alike, would be best served by the flat replacement or installation charge. From a consideration of the facts, it appeared that the replacement charge of $5.00 was fair and reasonable, with no change in rates.

Summary of Court Procedings and Schedule of Hearings.

INTERSTATE COMMERCE COMMISSION, WASHINGTON, D. C.

February 18: Acquisition by the Southern Bell Telephone & Telegraph Co., Atlanta, Ga., of the properties of the Oldham Telephone Co., La Grange, Oldham county, Ky., authorized.

March 4: The Illinois Bell Telephone Co. and the Winnebago County Telephone & Telegraph Co. filed a joint petition for approval of the purchase by the former company of all of the telephone properties of the latter concern in Winnebago county, Illinois

CALIFORNIA

March 2: Home Telephone Co of Covina applied for permission to withdraw its service in the territory now served in the vicinity of San Dimas and lying east of a line drawn parallel to and 500 feet west of the center of Valley Center street, Charter Oak. This territory is also served by Pomona Valley Telephone & Telegraph Union, and Covina company alleges that it is uneconomical and wrong in principle for both utilities to serve that neighborhood.

March 2: Coachella Valley Home Telephone & Telegraph Co. applied for authority to issue and sell its note for the sum of $10,000, payable on or before three years from date, with interest at 8 per cent per annum, and to secure it by a mortgage on its real property in the town of Thermal.

March 22: Hearing before Commissioner Thomas S. Lonttit at Taft, Kern county, of the commission's investigation into rates, rules, regulations and practices of the Kern Mutual Telephone Co.

INDIANA.

February 28: Petition denied of the Associated Telephone Co. for permission to purchase three northern Indiana telephone companies for a total of $135,000. The commission held that the valuation of the three companies—the Walkerton and North Liberty Telephone companies in St. Joseph county and the Nappanee Telephone Co. in Elkhart county is only $125,000 or $10,000 less than the price proposed. The commission's order contained scathing criticism of the methods used in attempting to effect the consolidation.

MICHIGAN.

March 24: Hearing on petition of farmer interests of state, headed by the Michigan Farm Bureau, for reduction in rural telephone rates representing 50 per cent of the advance recently authorized by commission for the Michigan Bell Telephone Co. and the Union Telephone Co., of Owosso, in districts where up to 1,000 stations are served.

MINNESOTA.

March 3: Application of the Akeley Telephone Co., Akeley, for authority to change its rates denied. The evidence presented failed to justify the proposed increase, and because of apparent errors in accounting, it was impossible to determine the actual operating expenses.

March 15: Hearing at Graceville on application of Parnell Telephone Co. for authority to change its rate for rural multiparty service.

NEBRASKA.

March 3: Application of the Northwestern Bell Telephone Co., Omaha, for authority to charge rates for No. 1 and No. 2 order turrets approved. This is a new service especially intended to facilitate line use by employing equipment that picks up calls from a number of lines, holding these or calling out on any of the lines, thus making for more rapid service.

March 4: Application of the Stella Telephone Co., Stella, for authority to issue a stock dividend of $7,000 and to issue $9,000 of additional stock; hearing held. Company allowed to amend application making the amount of new stock to be issued $16,000; testimony received and matter taken under advisement.

March 4: Complaint filed by H. Schultz of Denton against Lincoln Telephone & Telegraph Co., Lincoln, alleging that he is unable to get service at what he thinks is a reasonable rate.

March 15: Hearing at Nelson on the application of the Lawrence Telephone Co., Lawrence, for authority to issue $3,000 additional stock and to put into effect an increased schedule of rates.

March 15: Hearing at Nelson on application filed by Nuckolls County Independent Telephone Co., Nelson, for authority to increase capital stock from $50,000 to $100,000.

OHIO.

February 23: The Columbus Grove Mutual Telephone Co. filed application for authority to dispose of its entire property to the Columbus Grove Telephone Co. Consideration is 500 shares of common capital stock, the par value of which is $100 per share.

PENNSYLVANIA.

March 2: Hearing held at Harrisburg in the matter of the installation of an independent switchboard at Tioga by officers of the Citizens' Mutual Telephone & Telegraph Co. Previous to its installation, the Citizens' company and the Tioga County Bell Telephone Co., a consolidation of the Farmers' Mutual and the Pennsylvania Bell in Tioga county, were giving their respective subscribers service at the same switchboard at Tioga. The Tioga County company contended that the Citizens' company has violated the terms of a contract with it, while the latter company contended it was within its rights in establishing a second switchboard.

March 30: Hearing at Erie on schedule of increased rates of Mutual Telephone Co.

WISCONSIN.

February 23: Hearing on alleged failure of the Mt. Vernon Telephone Co. to comply with a commission order indefinitely postponed. The commission charges that the company has failed to comply fully with its order of March 9, 1922, to reduce the number of subscribers per line so as not to exceed 12 per line, except where necessity required, in which cases permission from the board was to be obtained.

February 24: Order issued on the application of the Wisconsin State Telephone Association on behalf of its member companies for authority to adjust toll rates, and in the investigation on motion of the commission of telephone toll rates of all telephone companies operating in Wisconsin, except the Wisconsin Telephone Co., specifying procedure under which toll rates of any Wisconsin telephone company may be changed to the schedule of toll rates of the Wisconsin Telephone Co.

February 28: Application of the Bundy-Crescent Telephone Co. for authority to increase rates denied because of the applicant's failure to appear at the hearing and because of the company's failure since 1920 to file the required annual reports.

February 28: The Hillsdale Western Telephone Co., Hillsdale, denied right of making extension in the town of Maple Grove, Dane county, because the Barron County Telephone Co., Barron, serves the same section. Public convenience and necessity do not warrant the extension.

February 28: Application of the Big Suamico Telephone Co., Suamico, for authority to increase its rates, approved, effective March 1.

February 28: Application of the Mosel & Centerville Telephone Co., Cleveland, for authority to establish a rate for replacement of a wall type telephone with a desk telephone, approved.

February 28: Augusta Light & Telephone Co., Augusta, authorized to discontinue its present schedule of rates for telephone service supplied through desk sets, and substitute therefor a rate of 15 cents in excess of the discontinued rate.

PRESCOT DRY CORE CABLES

We have an unrivalled experience in the manufacture of dry core cables, and are prepared to make Telephone Cables and Composite Telephone and Telegraph Cables to comply with our clients' specifications.

Laying PRESCOT CABLES in a European Capital

BRITISH INSULATED CABLES LTD.

Cablemakers and Electrical Engineers

PRESCOT, LANCASHIRE, ENGLAND.

THE WORLD'S BEST

When writing to British Insulated Cables, please mention TELEPHONY

England's Steel City Has Automatic

Sheffield, England, Famed for Its Steel Products, Now Automatic—Largest Automatic Multi-Office Exchange Area So Far Cut Into Service by British Post Office—Details of the Equipment and Special Features of Installation

The British Post Office is making rapid progress with the provision of automatic telephone exchanges to replace manual systems, a recent transfer of outstanding importance being that of the city of Sheffield, cradle of the steel industry of England and known all over the world for the excellence of its products.

This transfer to automatic is a remarkable achievement, being the largest of its kind ever made in any country, as it involved the simultaneous opening up of a network of nine automatic exchanges which superseded 11 existing manual exchanges.

The whole of the Sheffield telephone area is now automatic, the change having been made at midnight, March 5, without a hitch. The new automatic exchanges give a full automatic service for the area, and all subscribers can dial each other and also call direct to the new manual long distance exchange, which deals with long distance and other calls outside the area, coin-box lines, inquiries, etc.

The system comprises the following automatic exchanges, all of which were manufactured and installed by the firm of Siemens Brothers & Co., Ltd., London:

	Initial lines.	Ultimate lines.
Central	6,300	9,000
Broomhill	2,800	3,500
Beauchief	1,200	1,900
Sharrow	1,800	2,600
Attercliffe	1,000	1,500
Owlerton	800	1,200
Oughtibridge	100	100
Woodhouse	200	400
Ecclesfield	200	300
Totals	14,400	20,500

The new long distance exchange has 25 toll positions, 22 "A" positions, 3 junction and miscellaneous positions, and a 16-position monitor's desk for inquiries, etc.

The automatic exchanges are Siemens Brothers' No. 16 type, Central, Broomhill, Beauchief and Sharrow being main exchanges and the other five, satellites of Central.

Two of these (Attercliffe and Owlerton) are equipped with discriminators which enable calls between subscribers on the same satellite to be completed locally in the same manner as described in our recent article in TELEPHONY of December 11, on Siemens Brothers' system at Edinburgh; subscribers on these two exchanges can also dial direct to the long distance exchange. The three other satellites complete all calls through the main exchange.

All subscribers' numbers have five figures, the first digit selecting the exchange in the case of calls to the main exchanges and the first and second, or first, second and third, digits for calls to satellite exchanges.

Central Exchange Building, Sheffield, England, in Course of Erection. Automatic Telephone Equipment Is Already Installed on Top Floor, a Novelty in Telephone Construction Work.

Coin-box stations have common battery telephones without dials. They are joined up to their automatic exchange in the same manner as ordinary subscribers, except that their preselectors, instead of engaging a free first selector when a call is made, have direct access to a small group of junctions from their automatic exchange to manual positions on the long distance board.

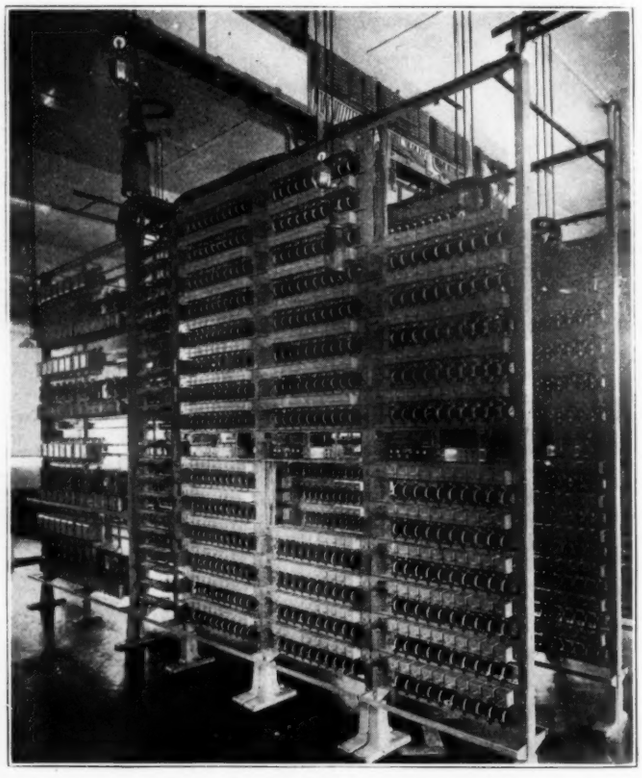
Coin-box stations are, therefore, used by the public in the same manner as if they were on a manual exchange, but calls to these stations are completed through the automatic switches.

All positions at the long distance exchange are equipped with dials which enable the operators to dial direct to any subscriber in the Sheffield area. The long distance operators can also dial direct to subscribers on the automatic exchange at Chesterfield, 12 miles distant, which is another Siemens Brothers' equipment.

The largest of the new automatic exchanges, Central, is housed in a fine modern steel and concrete building in the center of the city.

The automatic equipment, power plant, main frame, etc., are installed in the top floor of this building. The equipment includes an eight-position test desk, from which all line testing in the area is done.

An interesting feature of this exchange is that the equipment was installed on the site before the walls of the lower floors were completed. This appears to be something of a novelty in telephone exchange construction, and it is certainly a tribute to the adaptability of modern buildings.



Front View of Line Rack Showing Line Switches, Sectional Intermediate Distributing Frames and Connectors in the Sheffield New Automatic Telephone Exchange, Central Office.

NATCO

THE *COMPLETE LINE of* UNDERGROUND CLAY CONDUIT

(formerly McRoy-Camp)

A size and shape for every application. Large stocks permit immediate shipments.

Like NEW after thirty-five years of service *underground*

Ancestors of today's Natco Clay Conduit, laid thirty-five years ago, have been dug up during re-location work—sound as new.

Not surprising—when you consider that they are made of material unaffected by acids, alkalies, moisture and time. Material which has been vitrified into flint-like density, strength, and permanence.

Natco (formerly McRoy-Camp) Clay Conduit will not soften under red heat. It does not warp, soften, or swell when in contact with moisture. Immune itself, it shelters cables from chemical attacks. The glass-hard, salt-glazed surface, and the beveled edges of duct holes, makes cable pulling easy and safe.

With Natco Underground Clay Conduit first cost is low—maintenance is negligible—depreciation is nil—*for it's permanent.*

NATIONAL·FIRE·PROOFING·COMPANY

General Offices: **Fulton Bldg., Pittsburgh, Pa.**

Branch Offices: New York, Flatiron Bldg; Chicago, 26th and Shields Ave. Philadelphia, Land Title Bldg; Boston, Textile Bldg.

In Canada: National Fire Proofing Co. of Canada, Ltd., Toronto, Ontario.

The Only Concern in the World Making a Complete Line of Hollow Building Tile

NATCO IS PERMANENT

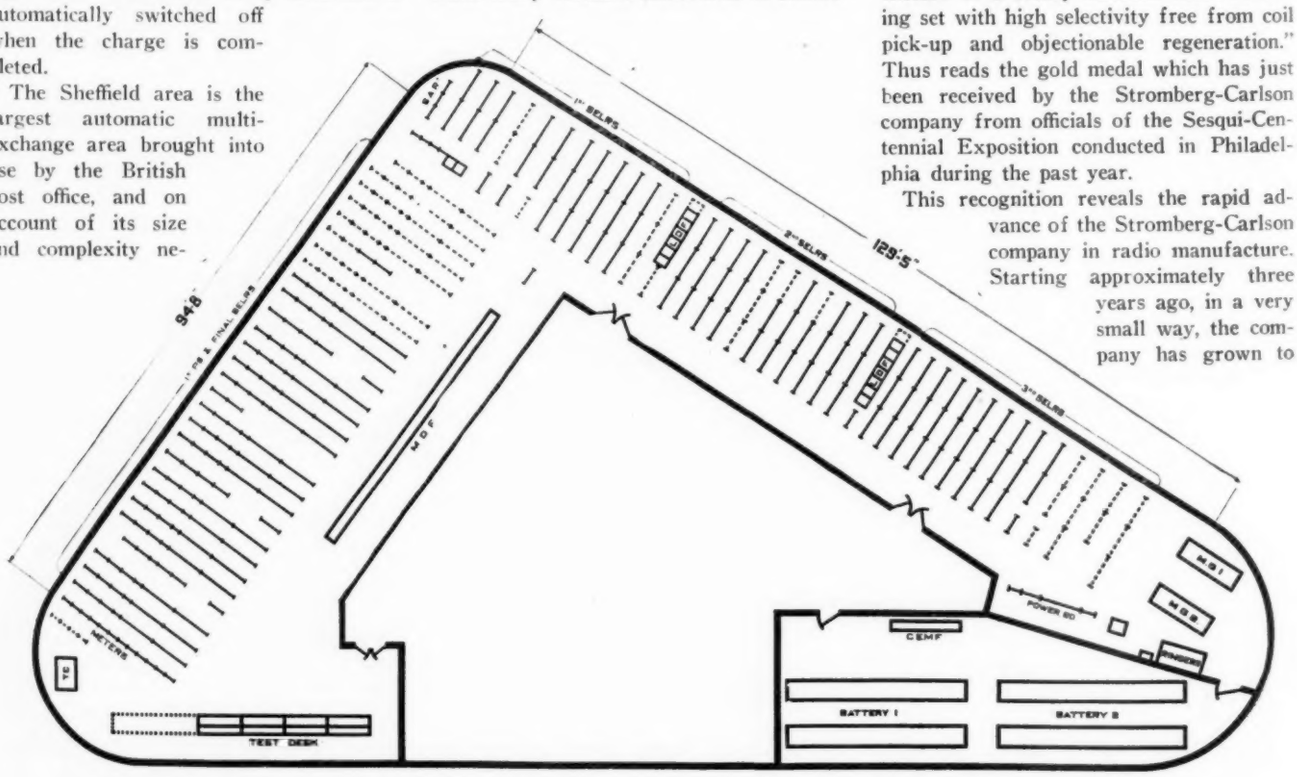
When writing to Fire Proofing Co., please mention TELEPHONY.

A View of Apparatus Room at the Sharrow Office of the Sheffield, England, Exchange. Motor Interrupter Rack in Center and First Selector Rack on Right.

The automatic exchanges have the same apparatus and embody the same features of interest as described in our recent article on the Siemens Brothers' No. 16 equipment at Edinburgh. An additional point of interest is the arrangement for charging the batteries at the small satellite exchanges which have no permanent duty man. In these exchanges, the charging current is switched on by hand and is automatically switched off when the charge is completed.

The Sheffield area is the largest automatic multi-exchange area brought into use by the British post office, and on account of its size and complexity necessitated extremely careful preparation which resulted in an entirely satisfactory and successful change-over.

It is rather an appropriate coincidence that a steel manufacturing area should be provided with a telephone equipment made by Siemens Brothers, because the founder of the firm, the late Sir William Siemens, in addition to his pioneer electrical work, made many valuable discoveries in connection with steel production, methods introduced by him being in use to this day.



Floor Plan of Central Office, Sheffield Exchange, Showing Layout of Automatic Switchroom and Power Room.

Stockholders of W. M. Matthews Corporation Elect Directors.

At the annual meeting of the stockholders of the W. N. Matthews Corp., held at the offices of the corporation in St. Louis, Mo., on March 1, the following were elected as directors of the corporation to serve for the ensuing year:

W. N. Matthews, Claude L. Matthews, M. C. Cooley, Frank Y. Gladney, and A. C. Carpenter.

Strowger Automatic Telephones in Middlesbrough Area, England.

In the article regarding the A. T. M. (Strowger) automatic installation in the Middlesbrough area, England, in last week's issue, the cut appearing at the top of page 44 was wrongly captioned. From the caption it would appear that the equipment was installed in Sheffield, England, exchange, which, of course, is not the case.

The title which should have appeared under this cut is: "A View of the A. T. M. (Strowger) Automatic Telephone Exchange at Marton, Middlesbrough, England. Line Switch Units, Trunk Board and Batteries." In other words, the wrong caption was placed under the cut showing some of the interior of the Marton automatic exchange.

Stromberg-Carlson Awarded Gold Medal at Sesqui Centennial.

"To the Stromberg-Carlson Telephone Manufacturing Co.—a Gold Medal in recognition of the development and manufacture of a totally shielded radio receiving set with high selectivity free from coil pick-up and objectionable regeneration." Thus reads the gold medal which has just been received by the Stromberg-Carlson company from officials of the Sesqui-Centennial Exposition conducted in Philadelphia during the past year.

This recognition reveals the rapid advance of the Stromberg-Carlson company in radio manufacture. Starting approximately three years ago, in a very small way, the company has grown to

American Steel & Wire Company's

Perfected

TELEGRAPH TELEPHONE Wire

Perfected Strand

We announce the perfection of our new process of tight zinc coating that is *smooth*, deeply laid and *naturally flexible* as the wire.

Produced in our old reliable standard brands "Extra BB" "BB" and "Steel"

SALES OFFICES

CHICAGO 208 So. La Salle Street
CLEVELAND Rockefeller Building
DETROIT ....Foot of First Street
CINCINNATI Union Trust Building
MINNEAPOLIS—ST. PAUL.. Merchants Nat'l Bk. Bldg., St. Paul
ST. LOUIS.....506 Olive Street
KANSAS CITY 417 Grand Avenue
OKLAHOMA CITY..... First Nat'l Bank Bldg.
BIRMINGHAM Brown-Marx Bldg.
MEMPHIS..... Union and Planters Bank Bldg.
NEW YORK.... 30 Church Street
BOSTON .... 185 Franklin Street
PITTSBURGH ..... Frick Building
PHILADELPHIA Widener Building
ATLANTA....101 Marietta Street
WORCESTER....94 Grove Street
BALTIMORE 32 So. Charles Street
BUFFALO.....670 Ellicott Street
WILKES-BARRE Miners Bk. Bldg.
DALLAS .... Praetorian Building
DENVER First National Bank Bldg.
SALT LAKE CITY Walker Bk. Bldg.

UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle

When writing to American Steel & Wire, please mention TELEPHONY.

be one of the important factors in the radio world.

It was in the Stromberg-Carlson laboratories that total shielding was first developed. This practice encloses all the apparatus of each radio stage in heavy copper "cans" which shield each stage from signals by the coils. It first appeared in the six-tube receiver placed on the market in the summer of 1925.

The Stromberg-Carlson system of shielding has been widely copied and imitated, but officials of the company derive much satisfaction in the fact that they were pioneers in this field.

The award of the Sesqui-Centennial Exposition recognizes the value of the Stromberg-Carlson company's contribution to radio science. A silver medal also was awarded the Stromberg-Carlson company, for its work in the development and manufacture of an improved type of reproducer.

Price Reduction on Two White Truck Models.

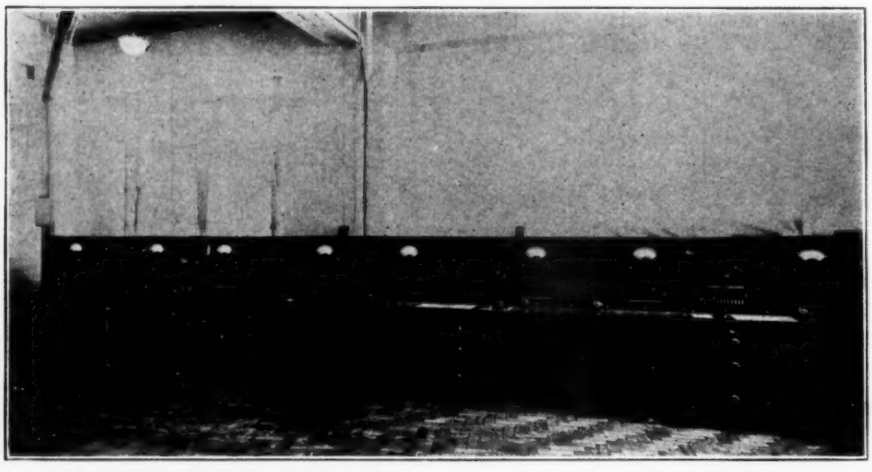
Development of a program planned for some time, resulting in The White Co.'s recent reductions in prices of two truck models, has been marked by a broadening for merchandising policy and expansion of White truck transportation into new and wider low price fields of light delivery.

Factory production schedules have been speeded up to meet the demand for quality trucks at lower prices. The new White policy has placed these high-grade trucks within the reach of all lines of business, providing a complete range of truck capacities and price.

The two light delivery models affected by price reductions are the model 15 and model 20. The former has three-quarter-ton to one-ton capacity, and the latter 1½ tons capacity.

"The commercial vehicle market," says President Walter C. White, "divides itself naturally into four classes—heavy-duty, express, light delivery and busses. It has been The White Co.'s policy to develop its product in order to meet as fully as possible the demands in these various lines and the changes in traffic conditions which are constantly arising. Latest developments apply to the light-duty fields.

"It seemed advisable to revise prices on the two light-capacity truck models so that they would be on a more nearly competitive price basis in these fields and yet keep the high standard of quality. Increased volume which we anticipate would not alone give us sufficient reduction, but increased volume together with narrower margin for merchandising which maintains in this field enables us to lower prices and reach a new and larger class of buyers. There is no change in quality construction, standard specifications and balanced engineering of any truck or bus in the White line."



Eight-Position Test Desk at the Central Office of the Sheffield, England, Exchange.

Chicago Engineer Purchases Three Wisconsin Telephone Properties.

William H. Crumb, well known in the Independent telephone field as an engineer and also as an operating man, has acquired control of three telephone properties in Wisconsin which eventually will be placed under unified management.

These properties are the Theresa Union Telephone Co., having headquarters at Theresa and operating 900 stations at Theresa, Campbellsport and Kewaskum; the Random Lake Telephone Co., operating 800 stations at Random Lake, Batavia and Belgium; and the Eden Telephone Co., operating 300 stations at Eden.

The companies serve communities in Dodge, Washington, Sheboygan and Fond du Lac counties, a rich, established agricultural territory offering unusual advantages. The plans followed by Mr. Crumb are along the lines of conservative financing and efficient management, and are expected to result in putting this group of properties on a strong, constructive basis. Mr. Crumb is also negotiating for additional exchanges.

The three companies named will continue to operate under their present organizations for a time, but under the Crumb management. Eventually they will be combined as one corporation.

Mr. Crumb has been identified with the telephone business since 1895 when he was construction engineer for the Central Union Telephone Co. In 1900 he became general superintendent of the Pittsburgh & Allegheny Telephone Co. Later he organized W. H. Crumb & Co., engineers and contractors, and built telephone plants at LaPorte and Lafayette, Ind., Sioux Falls and Yankton, S. D., Belvidere, Ill., Ishpeming and Marquette, Mich., and many others, including toll lines in Arizona, North Dakota and Idaho.

William H. Crumb, Independent Engineer, Who Has Purchased and Will Operate Three Wisconsin Properties.

He has also served as telephone engineer for the city of Chicago and the city of Louisville, Ky. During recent years he has been retained as expert counsel in a number of rate cases.

In connection with his investment, Mr. Crumb says he considers the future of the telephone business to be brighter and more assured than ever before, and that it offers a real inducement to the man who goes into it on conservative, constructive lines.

A "Telephone Trading Post" Located in New York City.

Only recently quite an organization having an exceptional and unique name was discovered in the city of New York, tucked away among the towering structures that so abundantly house the brokerage and financial firms for which that city is so famous at its lower end.

We have heard of an outlet for good clothing, used automobiles, used furniture, etc., but it has remained for the All-American Electrical Maintenance Corp. of New York City to conceive of a new name for its activities in the ever-expand-

Cope Specialties

The Cope Quick Coupling Conduit Rod is outstanding for its many salient features. It is designed for strength, durability and quick installation. It will **not** come uncoupled in the duct.

Cope Cable Racks likewise are made to stand severest test that can be given them. They are quickly installed.

Write for catalog today.

T. J. COPE

Underground Electrical Equipment

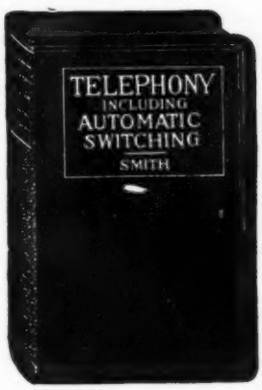
Chicago Office 19 S. LaSalle St — 2112-2114 Sansom St. Philadelphia, Pa.

Worthy Of One's Hire—

If a man is to succeed in the business world today he must be "worthy of his hire."

So it is with books. They also must give the reader his money's worth.

In offering "Telephony, Including Automatic Switching," for sale, its publishers have arranged an excellent collection of helpful information and data fully illustrated and up-to-date for the telephone man.

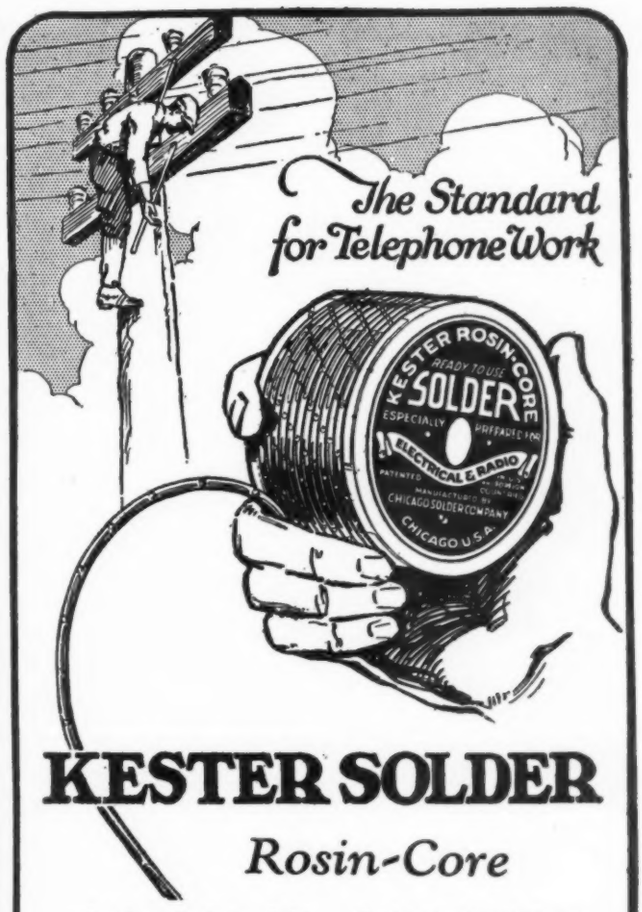


TELEPHONY, including AUTOMATIC SWITCHING, is written by Arthur Bessey Smith, E. E. Automatic switching is certainly being rapidly adopted, and the construction of every switch, relay and contractor in the whole range of automatic devices is clearly presentable.

Pocket size, bound in Leatherette, Gold Stamping, 500 pages, 263 illustrations and Wiring Diagrams.

Price $2.50

Telephony Publishing Corp.
608 So. Dearborn St. CHICAGO



The Standard for Telephone Work

KESTER SOLDER

Rosin-Core

In the telephone field Kester Solder is the standard for both maintenance and production work. The comprehensive line of Kester Solder embraces a range of sizes from approximately 1/4″ to 1/16″ in diameter. Standard Acid Core diameter, being 1/8″ and standard Rosin Core diameter 3/32″. Packed on one, five, ten and twenty pound spools, there is a range of size and style of package suitable for every practical purpose.

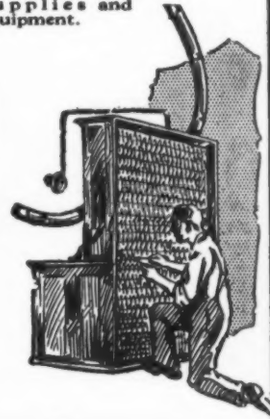
For heavier electrical work Kester Acid Core Solder can be used with considerable saving in time, labor and material.

For the more delicate electrical work on switchboards, etc., only Kester Rosin Core Solder should be used. Its pure rosin flux eliminates every danger of corroded work.

Most telephone companies specify Kester Rosin Core Solder No. 2, 50 core for cable line splicing as it not only conforms with the standard specifications, but also speeds up this class of work.

Kester Solder, either rosin or acid core is handled practically everywhere by jobbers of telephone supplies and equipment.

We maintain a completely equipped research laboratory where we have solved soldering problems for many manufacturers. While our standard line of Kester Solder is adequate for practically every soldering job there are occasions where a specially developed solder and flux are required.



Consult our Research Engineer on your soldering problems.

"Requires Only Heat"

CHICAGO SOLDER COMPANY
4211 Wrightwood Avenue, Chicago, U. S. A.
Originators and world's largest manufacturers of Self Fluxing Solder

ing field of telephony—"The Telephone Trading Post."

This hitherto apparently unknown firm is operated jointly by two telephone engineers in the persons of Edward A. Adelman and Albert A. Behr, who a few years back commenced purchasing used

W. L. Jacoby, New President and General Manager of Kellogg Switchboard & Supply Co., Is a Mechanical Engineer with Many Years of Successful Manufacturing Experience in Various Lines.

telephone equipment and reconditioning it for resale. They now point with pride to a clientele which includes a goodly number of the most representative firms located in New York and elsewhere who are satisfactorily using such equipment.

A superficial survey of the corporation's offices, stockroom and factory revealed equipment ranging from the ordinary house telephone to a complete exchange of the latest automatic type. In addition, it is the outlet for a number of telephone manufacturers who find it desirable to dispose of various kinds of equipment.

It also was evident that the United States government was of no little assistance to it for one observed much material that was obviously never even uncrated—doubtless constituting unused wartime material of Uncle Sam—such as Western Electric telephones, P. B. X.'s and even complete exchanges.

The officials of the All-American Electrical Maintenance Corp. attribute their rapid expansion to a method somewhat akin to that of the automotive sales organizations—trading-in old telephone equipment for more modern and, perhaps, larger types and offering their trade-in to firms with an eye for savings.

Prices in the Metal Markets.

New York, March 7—Copper—Steady; electrolytic, spot and futures, 13.37c. Tin—Easy; spot and nearby, $70; May, $68. Iron—Quiet; No. 2 f. o. b. eastern Pennsylvania, $20.50@21. No. 2 f.o.b. Buffalo, $17@18.00. No. 2 f.o.b. Alabama, $18. Lead—Steady; spot, 7.65c.

Caledonia (Ohio) Plant Bought by Chicago Holding Company.

The sale of the Caledonia Telephone Co. property to the Union Central Telephone Co., a corporation with main offices in Chicago, was announced recently.

As a result of this transaction the Union Central company owns two telephone properties in Marion and Morrow counties, having purchased the Mt. Gilead Telephone Co. holdings recently.

Although plans of the Chicago concern have not been announced it is possible that plants of the Caledonia and Mt. Gilead companies will be merged.

Practically all of the Caledonia company's stock is held by persons living in the village and vicinity.

The Caledonia company is capitalized at $48,910 and now has 600 subscribers.

Caledonia's first telephone service was inaugurated in 1901 by John Pommert and his father Christian Pommert, who operated the business until October 6, 1903, when the Caledonia Telephone Co. organization was perfected and took control.

John Pommert has been manager of the company ever since its organization and will continue in the same capacity temporarily.

Other officers are C. E. Kelly, president; T. J. Pittman, vice-president; L. C. Donnewirth, treasurer; E. E. Beers, L. J. Russell and J. E. Spiece, directors.

Kellogg Switchboard & Supply Co. Has New President.

William L. Jacoby was elected, on March 3, president, general manager and a director of Kellogg Switchboard & Supply Co., Chicago, to succeed Joseph B. Edwards, who for several months had been desirous of retiring.

Mr. Jacoby, who leaves a vice-presidency of A. G. Becker & Co., Chicago, is considered in Chicago financial circles as one of the best men in the field of manufacturing and factory management. In fact, he has been termed a "manufacturing wizard."

Graduating from Lehigh University as a mechanical engineer, Mr. Jacoby engaged in the steel business, principally with the Latrobe Steel Co. and the Latrobe Steel & Coupler Co. and the Inter-Ocean Steel Co. for a number of years.

He organized the Inter-Ocean company, designed and built its plant in cooperation with the eminent engineer, Julian Kennedy of Pittsburgh, and was its president up to the time of sale of the property to the Railway Steel Spring Co.

Later he was engaged in special engineering work for various outstanding individuals in the business world, and then became president of the Hewitt Motor Truck Co. and of the American District Telegraph Co. and its subsidiaries.

He left the latter company to become associated with A. G. Becker & Co., Chicago, investment bankers. This connection brought him into intimate relation with many varieties of industries, including the presidency of an agricultural implement company, of an automobile manufacturing company and others. He now leaves a vice-presidency of A. G. Becker & Co., after eight years of service, to become head of the Kellogg Switchboard & Supply Co., Chicago.

J. B. Edwards, the retiring president, has been one of the leading figures in the Independent telephone manufacturing industry for over 25 years. For a number of years prior he was also connected with the Western Electric Co. in various important positions, and at one time was in charge of its Antwerp works in Belgium.

Joining the organization of the Kellogg Switchboard & Supply Co. later under Milo G. Kellogg, he became vice-president and general manager of the concern, and in 1916 was elected president, serving until this month when he voluntarily retired to be succeeded by Mr. Jacoby.

Mr. Edwards' ability as a manufacturer had much to do with the excellent reputation Kellogg apparatus has won in the telephone field, and under his management

Joseph B. Edwards, for Past 11 Years President of Kellogg Switchboard & Supply Co., and Active in Telephone Manufacturing for Nearly 40 Years, Retires.

the company has become one of the leaders in the industry.

Mr. Edwards has served as a director of the United States Independent Telephone Association for many years, and is a member of its executive committee at the present time.

Condensed Telephone News

Companies Are Urgently Requested to Forward to Us Promptly News Concerning Construction, Rebuilding, Financing, Election of Officers, Sales and Purchases of Exchanges or Other Activities

Incorporations and New Telephone Companies.

CHATHAM, ILL.—The Central Illinois Telephone Co. has incorporated with a capital of $25,000 and 1,000 shares of non-par value. The incorporators are Charles Masters, F. S. Pereboom and F. A. Stutsman.

AUBURN, KY.—The Moore Telephone Co., of Auburn, has been incorporated with a capital stock of $30,000 by C. H. Moore, S. Hayden, Young and James N. Cox, the latter of Cookeville, Tenn.

MELBER, KY.—The Melber Telephone Co. with a capital stock of $25,000 has been incorporated by Henry E. Meyer, I. G. Otey and E. E. Davis.

WYNONA, OKLA.—J. P. Simpson and W. A. Miller are the incorporators of the Wynona Telephone Co. which has a capital stock of $20,000.

Financial.

KANSAS CITY, MO.—The Associated Telephone & Telegraph Co. of this city has increased its capitalization from $50,000,000 to $51,000,000.

LINCOLN, NEB.—The Continental Telephone Co. has increased its capital from $11,000,000 to $20,000,000; 205,000 shares including 100,000 of no par value, 5,000 of $100 par 7 per cent, participating preferred and 100 6½ per cent preferred.

Construction.

NEW BEDFORD, ILL.—The Bureau County Mutual Telephone Co. has installed a new switchboard in its office here. The lines are also being overhauled.

ASHLAND, KANS.—Work is under way placing telephone wires in Ashland underground.

BLODGETT, MO.—The Watermelon Telephone Co. is rebuilding its line. A $4 assessment is to be made on all patrons, according to a decison of the directors. The telephone line connects Oran, Benton, Morley, Blodgett and other towns in the watermelon growing section.

MEGGETT, S. C.—The Seacoast Telephone Co., with its main office at Martin's Point, is extending a line from Meggett to Edisto Island. W. A. Boyle is secretary of the company.

SCHAMBER, S. D.—Enterprising citizens of this neighborhood, which is about 10 miles south of Okaton, are putting in a telephone line between these two places which, when completed, will afford them long distance connections as well as local advantages. The enterprise is being sponsored and financed largely by Peter Peterson, of Schamber.

Elections.

CORDOVA, ILL.—The following officers were elected at the annual meeting of the Cordova Telephone Co.: President, J. D. Allen; vice-president, J. C. Golden; secretary, Lester Benway; treasurer, C. C. Ondycke.

Directors—Jacob Smith, Seth Pettib and Thomas Harvey.

FORRESTON, ILL.—Election of officers of the Forreston Mutual Telephone Co. at the annual meeting of stockholders resulted as follows: President, Harm DeWall; vice-president and manager, Joseph Frey; assistant manager, T. J. Cordes, German Valley; secretary, Harm Greenfield; treasurer, Harm J. Evers, and purchasing agent, Harm Meiners.

MICHIGAN CITY, IND.—At the annual meeting of the stockholders of the Merchants' Mutual Telephone Co. William B. Hutchinson was reelected president; D. H. Whitham, secretary; A. C. Weiler, treasurer. N. A. Seward was appointed manager.

ROSEDALE, IND.—At the annual meeting of the Rosedale Mutual Telephone Co., the old board of directors, Henry Allbright, John Hartman, Lee Overpeck, Wm. Hopper and Lewis Boyd, were re-elected for the ensuing year. The board organized by electing Louis Boyd, president; John Hartman, vice-president; Wm. Hopper, secretary; Henry Allbright, treasurer and manager; John Mitch, electrician.

COLUMBIA, IOWA.—The directors of the Farmers-Fountain Telephone Co. have elected these officers: President, John A. Reichert; vice-president, William Kollmer; secretary, Louis Ritter, Jr.; and treasurer, Louis Ritter, Sr.

LOST NATION, IOWA.—The Lost Nation Telephone Co. elected this board of directors: Carl Mohl, Will Pithan, Fred Dickman, Fred Daniel and J. E. Schoenthaler. From this board these officers were elected: Carl Mohl, president; Will Pithan, vice-president; Fred Dickman, secretary and treasurer.

WOODWARD, IOWA.—Three new directors were elected at the annual meeting of the Woodward Mutual Telephone Co. They are Ace Rowe, T. C. Taylor and A. E. Burkhart. The officers are: President, J. E. Storm; vice-president, J. M. Siglin; secretary-manager, Jess R. Perry; and treasurer, H. P. Calonkey. The directors re-elected are J. E. Storm, M. W. Burrell, J. M. Siglin and F. A. Grimm.

BEAR RIVER, MINN.—The old officers and the manager were reelected at the annual meeting of the stockholders of the Bear River Valley Mutual Telephone Co. They are: President, M. Jenkins; secretary-treasurer, Miles A. Nelson; manager, Curtis Bartlett.

Three new directors were named at the same time. They are Ole Brude, Peter Cain and Albert Thompson. They succeed Charles Beck, J. A. Westling and Peter Palm.

The Bear River exchange serves a number of farmers about 30 miles north of Hibbing.

Miscellaneous.

LAKE CITY, ARK.—The general office of the Inter-River Telephone Co. has just been removed to this city from Monette. The Inter-River company has just completed an extensive rebuilding program, replacing with cedar poles the old cypress poles in the main portion of the plant and placing a large amount of cable underground in Manila and Lake City.

The company has also purchased the brick building it occupies in Lake City. The company now owns all buildings it occupies in the five places where it maintains exchanges.

New metallic circuits have replaced the old grounded lines through a territory of 30 miles traversed by high tension lighting lines, and the entire wire plant of the Inter-River company is now in fine condition. The toll lines of the company have

The Telephone Business for Telephone Men

WE firmly believe in the Protective Measures advocated by the United States Independent Telephone Association and the various State Associations, with respect to Telephone Financing.

***Along these conservative lines only*—we are interested in assisting Telephone Companies in connection with Mergers and Refinancing.**

Our advisory-engineering, report and valuation service is directed by Mr. Charles W. McKay, a Consulting Telephone Engineer of over twenty years' experience.

We invite correspondence with respect to your own individual problems.

White, Weld & Co.

Public Utility Bankers for 25 Years

134 South La Salle Street

NEW YORK CHICAGO BOSTON

TRANSATLANTIC TELEPHONY

TAKES PLACE VIA

RUGBY, ENG.
RAIDO STATION

WHICH IS EQUIPPED WITH

ALTON BATTERIES

FOR IMPORTANT DUTIES

SPECIFY **ALTON**

ALTON THE BATTERY COMPANY LTD ALTON HANTS

Cables:—BATTERY, ALTON, ENGLAND
Codes:—6th Ed., ABC & BENTLEY'S

Representatives in Australia:

Messrs. Automatic Telephones, Ltd.,
Sydney.

Valuation—Supervision—Plant—Inductive Interference
Expert Administrative Council for Utilities
JAY G. MITCHELL
TELEPHONE ENGINEER
Member A. I. E. E.
Member W. S. E.
1411 South Park Ave. Springfield, Ill.

W. H. CRUMB
Telephone Engineer
9 South Clinton St. Chicago

TELEPHONE ACCOUNTING
"COFFEY SYSTEM"
The Independent Standard
Coffey System and Audit Co., C. P. A.
607 Peoples Bank Bldg. Indianapolis, Ind.
Exclusive Telephone Accountants

J. G. WRAY & CO.
Telephone Engineers
Specialists in Appraisals, Rate Surveys, Financial Investigations, Organization, and Operation of Telephone Companies.
J. G. Wray, Fellow A. I. E. E.
Cyrus G. Hill
1217 First National Bank Bldg., Chicago

been removed from the poles of the Frisco railroad.

LAKE CITY, ARK.—The Trumann Telephone Co. was recently purchased by C. C. Watson, owner of the Inter-River Telephone Co. of this city, and its name has been changed to Trumann Telephone Exchange. The company is not incorporated and is owned by Mr. Watson personally. The Trumann plant is now being rebuilt and 3,500 feet of new cable is being installed. Fifteen miles of company-owned rural lines have just been built and the office has been moved to new quarters over the Bank of Trumann. There are now 170 company-owned stations operated. The former owners of the Trumann exchange were Robert Oliver and W. H. Martin.

FAIRFIELD, IOWA—The Fairfield city council has voted to submit the question of granting a franchise for a new telephone company to the voters of this city at the approaching election which is to be held Monday, March 28. The following named citizens representing a new company to be formed immediately after the election, if the proposal carries, are the petitioners asking the submission of the question: J. H. Montgomery, Fred J. Hunt, Chester Fordyce, R. B. Louden, James L. Ball. Other citizens are associated with them and will join in the formation of the company that will soon be incorporated for the purpose of constructing a new telephone plant and necessary equipment.

The agitation for a new company is the result of an increase in rates put into effect the first of the year following rebuilding of the plant and installation of new switchboard equipment.

REMSEN, IOWA—The Remsen-Alton-Granville Telephone Co. is making preparations for improvements in its Remsen property, which are expected to be made during the coming summer.

In addition to contemplating the erection of a new centrally-located office and exchange building, the officers are planning to place the entire wire system in town underground. Two years ago, when the paving was laid, the company laid tiling under all street and alley crossings where the telephone lines are to be placed.

James C. Lake, of Atlantic, Iowa, has been engaged to do the cable work and has already drawn plans for the cable system.

MAYSVILLE, KY.—The Boone County Consolidated Telephone Co. asked Judge Cochran to appoint a receiver for the Hebron Telephone Co. because of the fact that $1,100 on its books had not been paid. About 15 of the directors and stockholders of the Hebron company were present at the hearing when Judge Cochran refused the application for a receiver.

STURGIS, MICH.—The Southern Michigan Telephone Co. was sold on March 2 to the United Telephone Co. of Chicago for the sum of $919,000. It is understood that the United company had purchased some 80 per cent of the stock at 10 cents on the dollar. The property was ordered sold by Federal Judge Fred Raymond for not less than $625,000 to satisfy the bond mortgage of that amount.

BERESFORD, S. D.—Municipal ownership is proving a success in the case of the municipally-owned telephone system in Beresford. It is officially announced that the system made a profit of $6,923.76 during the first year of operation, which now has closed. That the system made a profit was disclosed in a report to the city council by City Auditor Smith. The gross earnings of the system for the year were $19,491.98. The system is stated to be furnishing first-class service and is expected to increase its profit this year.

Be a supporter—mention TELEPHONY.

37.50 At Chicago
5 Times Faster.
"Typewriters" Names, Addresses and rates on bills 500 to 1000 an hour. FREE TRIAL. Easy Terms.
Addressograph
908 W. Van Buren St. Chicago, Ill

Rate Cases Valuations
Charles W. McKay
Financial Reports
448 Wrigley Building Chicago
Phone Superior 3016

J. K. JOHNSTON TELEPHONE JJK ENGINEER INDIANAPOLIS
During recent years I have been privileged to appraise Telephone Exchanges all over the United States. The list totals 520. Would you like to avail yourself of my services?
903-4 Lemcke Building

GUSTAV HIRSCH
Consulting Engineer
In all branches of Telephone Engineering, Rate Cases, Appraisals, Financial Investigations, Inspections and Reports
COLUMBUS - OHIO

Frank F. Fowle & Co.
Electrical and Mechanical ENGINEERS
Monadnock Building CHICAGO

CONSULTING
Telephone Engineer
GARRISON BABCOCK
1107 White Building
SEATTLE - WASHINGTON

W. C. POLK
CONSULTING TELEPHONE ENGINEER
Plans, Estimates and Reports, Appraisal and Supervision
Can arrange a moderate amount of financing
Telephone Building Kansas City, Mo.

DIRECTORIES
We publish your Directories FREE of CHARGE and pay you from 3 to 10 cents per name for your subscribers' list.
Also furnish stationery
WESTERN ADV. CO.
1284 GARFIELD AVE. TOPEKA, KAN.